Internists' Supplement

Contributed by

The American College of Osteopathic Internists

These papers were presented before a meeting of the American College of Osteopathic Internists, Chicago, July 17-19, 1947

Volume 3
Number 1

April, 1948
Pages 1 to 16

INTERNISTS' SUPPLEMENT

The American College of Osteopathic Internists

Editorial Office, 139 N. Clark St., Chicago 2, Ill.
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Clinical Use of Intravenous Morphine Ascorbate

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Even though morphine has been in use for the past 135 years, it is only within the last generation that this drug has been used intravenously. I wonder if we are not at the same stage of progress as Plato was when he taught that there were thirty-four teeth in the adult mouth. Five hundred years later a student was curious enough to look into the mouths of a number of persons and made the startling discovery that there were thirty-two teeth.

I first heard of the use of intravenous morphine at the University of Berlin in 1936, but did not give it much thought until Dr. W. W. Jackson of Little Rock, Arkansas, gave me the idea of combining morphine sulfate with sodium ascorbate for analgesia. This is perhaps the most perfect use of a drug for specific physiological needs; the amount can be controlled so there is no danger of overdosage. I often wonder how many patients are as ill from an overdose of morphine as from the reaction to pain or because of apprehension associated with the original illness.

ANALGESIC USES

When morphine is given intravenously, the full analgesic effects are immediate. It can be given when needed and the dosage individualized, and it may be used as an adjunct to regional or local anesthesia. In spinal anesthesia, 1/6 grain of morphine intravenously will often produce enough analgesia to make the patient comfortable during the preliminary stage and will often last long enough to complete the necessary surgery.

If spinal anesthesia begins to wear off before the operation is completed, enough morphine intravenously to make the patient comfortable will enable the surgeon to complete his work without supplemental anesthesia. Also this injection will take the place of the morphine that is usually given when the patient is returned to his room and is reacting from surgery. When morphine is administered intravenously 10 to 15 minutes before inhalation anesthesia, it will be noted that induction is much smoother and also less gas or ether will be required. We are all familiar with patients who go to the operating room after subcutaneous injections of morphine given anywhere from 15 minutes to 2 hours before starting anesthesia. This certainly is not utilizing the beneficial effects of morphine when it is needed most.

The intravenous injection of morphine has a definite place in the following examinations: bronchoscopy, gastroscopy, cystoscopy, and retrograde pyelography, in some cases.

THERAPEUTIC USES

Perhaps internists will find the intravenous use of morphine most valuable in the field of therapeutics. Dr. Jackson has suggested that morphine ascorbate intravenously will give relief in angina pectoris for from 4 to 7 days; whereas morphine subcutaneously will only break the cycle for a day or two. I have noted the same results in angina pectoris and coronary insufficiency. I never let the patients know I am giving them morphine. Dr. Jackson,[1] in private correspondence, states: "Oddly enough, only about a dozen injections, 4 to 7 days apart, are needed along with routine management. There is no danger of addiction as the average dose is ⅛ grain—rarely ¼ grain. In biliary and renal colic and coronary occlusion, it is perhaps the most nearly ideal drug we have in our armamentarium."

In acute lumbago, torticollis, or muscular spasms, calcium ascorbate plus morphine sulfate is the finest adjunct to osteopathic manipulative therapy. It has a definite place in cardiac dyspnea with or without pulmonary edema. Iacobaeus,[2] in 1930, reported on control of intractable pain in carcinoma. He found that patients rested better on smaller doses of morphine intravenously than larger doses subcutaneously. However, addiction must be taken into account when dealing with patients with cancer for many have already developed high tolerance to morphine.

Neuhof[3] reported some interesting work on a series of cases in which considerable postoperative pain could be anticipated. He dissolved ⅝ grain of morphine sulfate in 1000 cc. of normal saline and gave it by slow drip intravenous infusion—100 cc. of saline containing 1/16 grain of morphine per hour—for 24 to 36 hours. Complete freedom from pain and discomfort was noted. In fractures and dislocations, intravenous morphine is one of our outstanding adjuncts, as it is also in debridement of lacerations, the painful changing of dressings, and in making the female patients more comfortable during difficult pelvic examinations.

DIAGNOSTIC USES

Intravenous injection of morphine is a great aid in the differential diagnosis of the acute conditions of the abdomen. We have all been taught to withhold morphine in such cases, but those of us who have found it helpful in the diagnosis of atypical cases do not hesitate to use it. Its use makes it possible to detect pneumonia or coronary artery disease when least suspected. Singer[4] and Eusterman[5] have stated that being able to get a coherent history and to make a thorough examination is worth the effort involved in intravenous administration.

MORPHINE ASCORBATE

To my knowledge Dr. Jackson was the first to use morphine and sodium ascorbate intravenously. One does not realize how little work has been done in this field until he endeavors to look up the literature on intravenous use of morphine. It is like many other fields of medicine. We are so busy looking for the unusual or difficult that we fail to utilize the great discoveries close at hand which have been with us a long time. Four years ago Dr. Jackson did some work at the University of Chicago in which he was able to identify the combination of morphine sulfate and sodium ascorbate as a new drug. Some work is planned for this year (1947) at Western Reserve, but at the time this paper was written there was no literature available. I have made a special effort to determine the chemical reaction of morphine sulfate and sodium ascorbate or calcium ascorbate in the body. One chemist says there would be no reaction in vitro, but the four salts would be present in the form of sodium or calcium ascorbate, morphine, and sulfate ions.

Three years ago I was very hesitant to try something new which had not been reported to any great extent in the literature. Subsequent favorable expe-

rience in many cases has removed any fear that I might have had.

TECHNIC OF ADMINISTRATION

Dissolve the amount of morphine sulfate you think the patient needs, in a 10 cc. ampule of sodium ascorbate or 5 cc. of calcium ascorbate (calscorbate, Cole Chemical Company). Drop the tablet into the ampule and shake. This will readily pass into solution. Better still, use the rubber-stoppered ampule of morphine sulfate, ¼ grain per cc. Draw 1 to 2 cc. into the syringe plus the sodium or calcium ascorbate. With a fine needle, following the usual aseptic procedure for intravenous medication, inject the solution at the rate of about 1 cc. per minute.

I tell my patients I am giving something which will make them more comfortable and I ask them to tell me as soon as they begin to feel relief from pain. I leave the needle in the vein for a few moments until I am satisfied that they are comfortable. After giving 2 or 3 cc. I ask the patients whether they note any change other than pain, such as dizziness, tinnitus, spots before the eyes, sense of general body warmth. If they state that they are experiencing any of these sensations, they are instructed to take three or four deep breaths and to make a special effort to exhale forcibly. This will cause the transient unpleasantness to pass away immediately. At times this is noted before the relief of pain. Three or four of my patients have developed nausea, one vomiting, but in each case I have felt that the cause was too rapid administration.

CASE HISTORIES

Man, farmer, aged 50, complained of "severe pains in both arms, especially left, and terrible vise-like pains in chest." He was taking 18 to 20 nitroglycerin tablets, 1/100 grain, daily. This gave him his only relief. He had always done heavy physical work. Pain started 6 months ago while he was at work.

When the patient made his first visit to my office he received morphine sulfate, 1 cc. or ¼ grain, dissolved with 500 mg. sodium ascorbate and given intravenously. He returned 2 days later wanting more of what he had had in the vein at the first visit. He had taken only three tablets of nitroglycerin in 48 hours. A diagnosis of coronary insufficiency was made. After five doses of morphine ascorbate, the patient was able to do light work with only routine care. He notes precordial distress only after a 2-mile walk or heavy lifting.

Woman, aged 51, obese. I was called at 5 A.M. to see a patient who had been vomiting for 3 hours. She had very severe pain in the upper right quadrant and had been unable to find any relief. She guessed that her trouble was due to "gallstones that were diagnosed 5 months ago by x-ray." Morphine sulfate was dissolved in 10 cc. sodium ascorbate solution for intravenous administration. After 1 cc. of solution had been injected, the patient gave a deep sigh and stated that all pain was gone. The needle was left in the vein for a few moments longer. The patient could breathe easily and said she felt like a new person. Only 1 cc. of solution was administered.

Woman, aged 35, had an appendectomy, uterine suspension with fixation of bladder on uterus, and perineorrhaphy. When patient reacted to inhalation anesthesia, she was given ¼ grain of morphine sulfate with 10 cc. sodium ascorbate; 2 to 3 cc. of solution relieved the pain. The remaining solution was given whenever there was pain. The patient knew we were using a new procedure for analgesia and gave full cooperation. During the postoperative period she received ¾ grain of morphine sulfate and 30 cc. of sodium ascorbate solution. Recovery was uneventful. The patient was up on the third day and left the hospital on the sixth day.

To my knowledge there are no contraindications to the use of morphine sulfate intravenously; however, the following should be kept in mind:

In my opinion ascorbate-morphine should not be given intramuscularly or subcutaneously. It should not be given to a patient who is on digitalis.

Animal experiments have shown that the respiratory system is particularly susceptible when morphine sulfate alone is injected into the blood stream. Only a slight amount above normal tolerance will bring about respiratory collapse and resulting asphyxia.

In two cases of migraine headache no results were obtained by the administration of ascorbate-morphine. One patient received ¾ grain of morphine in 10 cc. calcium ascorbate solution with no relief. She stated she was "doped up" the rest of the day. She thought her headache was a little better the next day.

The past 6 months I have used routinely 5 cc. calscorbate as the vehicle for the morphine sulfate. It seems smoother in its action and reaction. I feel that the calcium salt is more essential in body metabolism than the sodium salt. It is worth every doctor's time to acquaint himself with the improvements in calcium therapy which calscorbate has given us in the past 3 years.

SUMMARY

1. The use of morphine intravenously for relief of pain is not new, although the practice has not been very extensive. Literature on the subject is scanty.

2. The technic for the administration of ascorbate morphine is given. Emphasis is placed on "slow" infusion.

3. There are no apparent contraindications, but certain suggestions are given according to personal experience.

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REFERENCES

1. Jackson, W. W.: Personal communication.
2. Iacobaeus, H.: Methodical intravenous morphine injections in palliative therapy. Ugesk. f. laeger 92:319-327, April 3, 1930.
3. Neuhof, H.: Cited by Presman, D., and Schotz, S.: Critical analysis of use of intravenous morphine. Anesthesiology 4:53-66, Jan. 1943.
4. Singer, H. A.: Morphine as an aid in diagnosing acute abdominal affections. Am. J. Surg. 34:5-11, Oct. 1936.
5. Eusterman, G. B.: Medical aspects of gastro-intestinal emergencies. M. Clin. North America 22:883-894, July 1938.

ADDITIONAL REFERENCES

Bowen, F. H.: Intravenous administration of morphine tartrate. U. S. Nav. M. Bull. 46:740-741, May 1946.
Powers, B. R.: Intravenous use of morphine sulphate in treatment. J. Tennessee M. A. 32:50-51, Feb. 1939.
Smith, H., and Schotz, S.: Intravenous morphine. J. M. A. Alabama 14:265-267, May 1945.

Osteop. Internists, Vol. 3, No. 1
April, 1948

Liver Extracts and Folic Acid in the Anemias

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Until about 20 years ago practically all patients with pernicious anemia were doomed to die within 1 to 3 years following the onset of symptoms. Despite blood transfusions, administration of arsenic, or splenectomy the outcome was always fatal. Since the recognition of liver as a therapeutic agent, the outcome of these cases has changed completely. Now practically all patients with pernicious anemia live an average lifetime if they continue maintenance doses of liver. It is only in cases with extreme neurological involvement and secondary infection that death cannot be prevented.

The importance and value of liver in anemia of dogs was first observed in the United States by Whipple and his associates at Rochester University during the period 1920 to 1925. Then in 1926 and 1927 Minot and Murphy[1,2] reported striking improvement in patients with pernicious anemia who were given a diet of ½ to 1 pound of fresh liver daily, and this report was corroborated by reports from other sources. However, daily feedings of liver were obviously impracticable.

When Cohn and others[3] demonstrated that antianemic substances could be extracted from liver by hot water, this water extract was found to contain the primary and secondary factors, the vitamin B complex, minerals, and a yet unidentified water-soluble substance present in fresh liver. Today this water extract is the basis for most of the dry and liquid liver extracts as well as many vitamin B complex preparations.

In 1927 Cohn[3] treated the aqueous extracts by fractionation with alcohol and separated the primary and secondary factors. His 70 per cent alcohol fraction is referred to as fraction G of Cohn and the residual precipitate is known as Whipple's secondary anemia fraction. Most of the antipernicious anemia principle is contained in Cohn's fraction while Whipple's fraction contains water-soluble vitamins, minerals, and substances which act as building materials for hemoglobin. Since Whipple's fraction accelerates hemoglobin formation it is valuable in the treatment of posthemorrhagic anemia.

In the United States the potency of injectable liver now is determined upon unit basis—a unit being the least amount which when administered daily will produce a satisfactory reticulocyte response accompanied by a satisfactory erythrocyte rise and symptom improvement in uncomplicated pernicious anemia. In Canada the unit is based mainly upon a satisfactory erythrocyte rise since the reticulocyte response may not always meet expectations.

There are many parenteral preparations of liver on the market ranging in the crude extracts from ½ to 4 units per cubic centimeter and in the refined extracts from 3½ to 15 units per cubic centimeter. The crude extracts were considered formerly to contain greater quantities of B vitamins than the refined extracts, but Clark[4] has shown recently that riboflavin, niacin, pantothenic acid, and folic acid are found in equal or greater quantities in the refined extracts. On the other hand, there have been cases of "tropical" macrocytic anemia reported in India which very closely resemble pernicious anemia and in which the crude extract was effective while the refined extract failed. Some authorities have suggested that the refined extract lacks a factor, designated as the Wills factor, other than that required by the patient with pernicious anemia. While there are apparently some cases of "tropical" macrocytic anemia which will respond only to crude liver, Wintrobe[5] considers that there is little evidence to support the use of crude liver in addisonian anemia even where there is involvement of the central nervous system.

The dosage of liver, of course, is dependent upon the individual patient. The restitution of the blood and alleviation of symptoms is the object of treatment. An excess of merely basic requirements of the antianemic substances should be administered to store a reserve supply in the body. If the patient is old, arteriosclerotic, or suffers from infections or other diseases, he will require larger dosage. When the nervous system is involved greater doses must also be given.

In a severe case, 15 units intramuscularly should be given daily until a satisfactory reticulocyte count has been reached, which usually occurs in 5 to 7 days. Then 15 units a week should be given until a normal picture is obtained though larger doses may be given to build up a reserve since little seems to be lost through excretion. Generally speaking, liver is so specific in the treatment of pernicious anemia that in the face of an unsatisfactory response the diagnosis is questionable, there is a serious complication, or the potency of the liver is inadequate. To avoid relapse and complications, maintenance doses must be given for the rest of the patient's life. An equivalent of about 1 unit per day maintenance is considered satisfactory, one injection being given at 2 to 6 weeks intervals. Patients are to be warned of the consequences of not maintaining the injections, since relapses may entail neurological complications, infections, diminished response to liver and possibly death. The really conservative management is overtreatment rather than merely meeting basic requirements.

The urinary excretion of the antianemic factor was studied by Lange, Ramsey, and Moore[6] and the excretions from a patient with pernicious anemia under treatment showed no evidence of containing any of the factor. A healthy control subject was used. This experiment tends to further indicate that excess of the antianemia substance is probably stored in the body. In spite of such storage, however, there should not be any laxity in maintenance of injections.

The use of oral liver preparations is not, generally, a reliable and practical therapeutic procedure. Not only is there a wide variance in potency, but also it is relatively expensive, and the administration must be frequent. Parenteral liver is thirty to one hundred times more potent and effective. Oral substances have been ineffective in some patients with pernicious anemia, sprue, and some forms of macrocytic anemia as in idiopathic steatorrhea and after intestinal anastomosis. Then again some cases may show hematopoietic response, but symptoms, such as glossitis, fail to improve. Patients who insist upon oral therapy should be observed closely. "Shotgun" preparations containing liver, iron, vitamins, and other ingredients are to be condemned since they not only reflect unfavorably upon the physician, but also may mask condi-

tions such as pernicious anemia in which case the patient may suffer relapse and complications before an accurate diagnosis is established.

Undesirable reactions to liver may occur. Diarrhea occasionally follows ingestion of oral substances. Acquired sensitivity from parenteral adminstration may be attributable in some cases to prior use of liver orally. However, some patients may have organ-specific sensitizations. There is a wide variety of reactions, such as tachycardia, flushing, weakness, urticaria, bronchospasm, rigor, hyperpyrexia, substernal pain, vomiting, collapse, angioneurotic edema, and, rarely, death. Seventeen per cent of a series of 398 were reported sensitive by Schwartz and Legere[7] who suggest the following methods to circumvent reactions: (1) Changing brand or type of extract, thus avoiding specific sensitivity to pork, beef, or horse liver; (2) reducing dose, using more frequent injections; (3) desensitization by extract; (4) utilizing a histamine-protein complex to produce histamine antibodies. The recent advent of folic acid perhaps may obviate to some extent the problem of reactions to liver.

Failure of liver therapy may be encountered in the presence of infection or a complicating disease such as arteriosclerosis. Genitourinary infections are not uncommon and are particularly troublesome. Case reports at the Philadelphia Osteopathic Hospital indicate that the use of dilute hydrochloric acid will enhance the efficacy of liver. Concomitant ascorbic acid deficiency also may be a factor in failure of therapy as well as the lack of choline and methionine in diseases of the liver, and administration of these substances usually produces satisfactory results. Then there are a small number of patients who in spite of a good diet have a lag in hemoglobin production with a reduced mean corpuscular hemoglobin concentration. Iron is indicated in these few cases.

The clinical conditions in which there is a definite or probable deficiency of the antianemic principle and thus in which liver is indicated are: (1) Pernicious anemia; (2) sprue, including idiopathic steatorrhea and some cases of intestinal stricture or resection; (3) "tropical" nutritional macrocytic anemia, including dietary deficiency states in temperate zones; (4) rare cases of carcinoma of stomach; (5) macrocytic anemia of pregnancy; (6) Diphyllobothrium latum infestation; (7) chronic and extensive liver disease; (8) macrocytic anemia of hypothyroidism; and (9) achrestic anemia.

In most of these macrocytic anemias it is felt that the therapeutic action of liver probably is not that of a stimulant to the hematopoietic centers; this assumption is based upon the observation that the bone marrow is hyperplastic particularly in the severe cases. It is more probable that liver meets a deficiency, whether this deficiency be the "extrinsic factor," the "intrinsic factor," or the "erythrocyte maturing factor," dependent on circumstances. According to Castle and Minot[8] the "extrinsic factor" plus the "intrinsic factor," in the presence of adequate gastrointestinal absorption, is necessary for the production of the "erythrocyte maturing factor" in the liver. Some macrocytic anemias lack only the "extrinsic factor," which is proper food. It is thought that in pernicious anemia there is lacking an "intrinsic factor" of gastric origin. Other macrocytic anemias may be present in certain gastrointestinal or liver diseases as a result of interference in the production of the "erythrocyte maturing factor." While it is possible, theoretically, to treat some anemias by supplying only the "extrinsic factor" of food, Wintrobe[9] believes it is more practical to treat all types of macrocytic anemias by using the complete antianemic principle.

It may be of interest to note that Timmes[10] reporting on radiation sickness following the atom bomb in Nagaski states that among other things the bone marrow was markedly depressed. Most patients had an aplastic anemia. Liver extract in these cases was not very effective; however, it is recognized that this radiation produced many other changes in these patients besides the effect on the bone marrow.

A vitamin, folic acid, discovered in the last few years, bids fair to become a milestone in the study of the macrocytic anemias. While the importance of folic acid in the treatment of pernicious anemia, nutritional macrocytic anemias, and sprue perhaps has been overstressed, it is quite probable that its ultimate importance will be rather a stepping stone in the discovery of the exact nature of the antipernicious anemia principle itself. Much has been written about folic acid in treatment. The writers of stories for popular magazines already have presented an embellished picture to the public, resulting in considerable misinterpretation. One would be led to believe that folic acid replaces liver therapy, but Spies[11] does not recommend its routine use, for instance in pernicious anemia, since there is no evidence at present that it protects against neural involvement. As with many other medicinal agents advanced in the last decade, the first flush of enthusiasm over folic acid is likely to be replaced by a more sober appraisal when further scientific data becomes available. While it has been demonstrated unquestionably that folic acid does produce a favorable response in many cases of the macrocytic anemias, nevertheless it is quite evident that folic acid is not the antianemic principle itself. What role it plays in the production or utilization of this principle has yet to be determined.

Since isolated articles in the literature may be confusing in their terminology concerning the vitamin folic acid and related substances, it may be well to review some of the studies in the historical background. These studies concern vitamins in the role of growth factors in animals and with bacteria.

In 1931 Wills[12] demonstrated a beneficial effect of yeast extract in the macrocytic anemia of pregnancy which is common in India. Wills and Bilimoria[13] later induced tropical macrocytic anemia in monkeys and then relieved this anemia by the use of marmite, a yeast extract. This factor was designated as "vitamin M." Stokstad and Manning[14] in 1938 reported that chicks on an adequate diet of all known essentials needed an additional factor for growth. In 1940 Hogan and Parrott[15] proved the existence of a new member of the vitamin B complex which was necessary to prevent anemia and produce growth in chicks, and this was given the term vitamin B_c (because of its role in the chick). Wintrobe[16] in 1939 reported maximal hematopoietic response from brewers' yeast in five cases of pernicious anemia.

In 1940, Snell and Peterson[17] in their studies in the bacteriologic fields reported that certain lactic acid bacteria required plant or animal extracts for growth. Yeast extracts and solubilized liver fractions were rich sources of this growth factor. In 1941, Mitchell, Snell, and Williams[18] obtained a concentrated growth factor for Streptococcus lactis R and Lactobacillus casei from spinach and because of its source named the factor folic acid. In 1943 Stokstad[19] isolated from liver and

from yeast a potent factor for Lactobacillus casei. Brigg and others[20] in 1944 found two factors in liver necessary for feathering and growth in chicks which they designate as vitamin B_{10} and vitamin B_{11} and which are distinct from folic acid. Then in 1945, a large group of investigators interested in this elusive factor, synthesized a compound active for Lactobacillus casei and Streptococcus lactis R which promoted growth and enhanced hemopoiesis in chicks.

This synthetic Lactobacillus casei factor was found to be identical with the Lactobacillus casei factor isolated from liver. It is now known as pteroylglutamic acid, Lactobacillus casei factor or folic acid, these terms being synonymous. Vitamin B_{10} and B_{11} may be related to folic acid or they may be conjugated forms of vitamin B_c. It is also known that the Lactobacillus casei factor derived from liver is chemically different from that obtained from yeast, the latter having two more molecules of glutamic acid.

Late in 1945 Spies[21] began experimenting with synthetic folic acid in human macrocytic anemia and found that the response was similar to that with liver extracts. In his book "Experiences with Folic Acid" Spies[22] reported 218 cases treated with folic acid and enumerated them as, 78 cases of addisonian anemia, 76 cases of tropical sprue, 2 cases of nontropical sprue, 46 cases of nutritional macrocytic anemia (pellagra), 3 cases of macrocytic anemia of pregnancy, 8 cases of nutritional leukopenia, and 5 cases of cirrhosis of liver. All cases responded satisfactorily except those of cirrhosis of the liver in which only 1 out of the 5 responded. Further investigation revealed, however, that there was no response in cases of leukopenia caused by arsenicals, aminopyrine, and sulfonamides. Also no response was reported in the cases of aplastic anemia and hypochromic anemia with daily doses as large as 400 mg. orally. Megaloblastic anemia in infancy was reported[23] to be favorably responsive to folic acid as well as to liver therapy, and there was no evidence that one was more effective than the other. The reports are increasing in the literature concerning folic acid, but it would be repetitious to continue to cite them here other than to reiterate that it produces favorable reaction, sometimes dramatic, in the macrocytic anemias.

Where there is a favorable response to folic acid it is similar to that with liver therapy. The usual reticulocyte rise and erythrocyte response can be demonstrated as well as symptom improvement. There is also variable increase in hemoglobin and in white cell and platelet count. However, the response is no greater than that from liver and may be slightly less. It may also be slower. Clinical experience has shown that a combination of folic acid and liver extract may produce a slightly higher reticulocyte count in cases with a sluggish response.

Dosage of folic acid in the experimental studies ranged upward to 400 mg. Doan, Wilson and Wright[24] showed that as little as 2 mg. a day parenterally for 20 days could produce the maximum calculated reticulocyte response in sprue. Spies states that in his cases of pernicious anemia, sprue, and the related macrocytic anemias no patient failed to respond to 20 mg. doses, and that liver extract was not effective in the conditions in which folic acid failed. The administration of folic acid may be oral, subcutaneous, intramuscular, intravenous, or by enema, the rectal route being more efficient than the oral. There are apparently no unfavorable reactions to folic acid therapy.

It is interesting and intriguing to compare folic acid and liver extracts. The response to folic acid is about the same or somewhat less than the response to liver extracts, yet there is only a small amount of folic acid in liver extracts. In fact, about 1/10 ounce of folic acid is contained in 1 ton of fresh liver. On the other hand, we have spoken only of the response, and have not considered maintenance. It is very questionable that folic acid can be used safely for maintenance therapy in pernicious anemia since there is good evidence that it may not protect against neurological involvements, whereas liver extracts afford this extra neural protection. It is evident, also, that folic acid does not reverse established neurological complications, but liver has been known to do so. Then too, it is not known how long the increased blood levels will continue upon maintenance doses of folic acid in pernicious anemia—perhaps 1 year or so—more time and study are required to evaluate this phase.

A problem in pernicious anemia according to Castle and Minot[25] is a deficiency of the "intrinsic factor." How then does folic acid produce a response since it appears to be in the "extrinsic factor"? It is known that folic acid is widely distributed in foods in the form of the conjugates of higher molecular weight. These conjugates are not broken down to liberate folic acid in the patient with pernicious anemia, possibly because of a disturbance in the enzyme system related to the mechanism of the "intrinsic factor." Thus the administration of folic acid appears to by-pass to some degree the ordinarily required action of the "intrinsic factor" upon food. If this hypothesis is tenable, it may turn out that folic acid or a related substance becomes one of the components of the "erythrocyte maturing factor," or may play some role in its production. This may partly account for the fact that while there is only a small amount of the Lactobacillus casei factor present in liver extracts, relatively large amounts of straight folic acid are generally needed to produce a response. Also in this respect, a great deal of the Lactobacillus casei factor is excreted when administered in pernicious anemia while none of the antianemic principle could be determined to have been excreted upon biological assay in pernicious anemia under liver therapy.

In the treatment of sprue, folic acid now is considered one of the antisprue factors which is contained in liver. While the Lactobacillus casei factor in sprue improves diarrhea, glossitis, etc., sometimes dramatically, nevertheless the paresthesias of the hands and feet are not improved. Liver may have its failures, too. The problem in sprue seems to be an impaired absorption for one reason or other and the deficiency thus produced is treated by attempting to supply this deficiency with folic acid or liver. Failures are not always explicable. However, where there is a demonstrable cause, such as parasitic infestation, it should be dealt with.

While folic acid or liver extract probably supplies a deficiency in the macrocytic anemias neither one is intended to replace food. Thus an adequate diet particularly rich in proteins, vitamins, and minerals is a necessary part of the treatment. It is also important to treat concomitant conditions or disease states.

SUMMARY

The exact nature of the antipernicious anemia principle is not known, but it is apparently contained in liver extract which is used effectively in the treatment of macrocytic anemias. Lactobacillus casei factor or synthetic folic acid is a vitamin which has been

demonstrated to produce a favorable response in these anemias; however, it is questionable that it can entirely replace liver therapy. It is evident that folic acid might be useful as an interim therapy in cases developing sensitivity to liver. Just what role folic acid plays in the body is yet to be ascertained. While it is not the antianemic principle itself, it apparently plays some part, directly or indirectly, in the mechanism we call hematopoiesis. Clarification of this role must await further investigation.

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REFERENCES

1. Minot, G. R., and Murphy, W. P.: Treatment of pernicious anemia by special diet. J. Am. M. A. 87:470-476, Aug. 14, 1926.
2. Minot, G. R., and Murphy, W. P.: Diet rich in liver in treatment of pernicious anemia; study of 105 cases. J. Am. M. A., 89:759-766, Sept. 3, 1927.
3. Cohn, E. J., *et al.*: Cited in Atlas of hematology. Armour & Co., Chicago, Rev. Ed., 1945, p. 77.
4. Clark, G. W.: Vitamin content of liver extracts for parenteral use. Am. J. M. Sc. 209:520-524, April 1945.
5. Wintrobe, M. M.: Clinical hematology. Ed. 2. Lea & Febiger, Philadelphia, 1946, pp. 328, 329.
6. Lange, R. D.; Ramsey, R. H., and Moore, C. V.: Urinary excretion of antipernicious anemia factor. J. Lab. & Clin. Med. 30:1048-1055, Dec. 1945.
7. Schwartz, S. O., and Legere, H.: Treatment of liver extract sensitivity. Blood 1:307-316, July 1946.
8. Castle, W. B., and Minot, G. R.: Pathological physiology and clinical description of anemias. Oxford University Press, New York, 1936.
9. *Op. cit.* ref. 5, p. 411.
10. Timmes, J. J.: Radiation sickness in Nagasaki; preliminary report. U. S. Nav. M. Bull. 46:219-224, Feb. 1946.
11. Spies, T. D.: Experiences with folic acid. Year Book Publishers, Chicago, 1947.
12. Wills, L.: Treatment of "pernicious anemia of pregnancy" and "tropical anemia," with special reference to yeast extract as curative agent. Brit. M. J. 1:1059-1064, June 20, 1931.
13. Wills, L., and Bilimoria, H. S.: Production of a macrocytic anaemia in monkeys by deficient feeding. Indian J. M. Research 20: 391-402, Oct. 1932.
14. Stokstad, E. L. R., and Manning, P. D. V.: Evidence of new growth factor required by chicks. J. Biol. Chem. 125:687-696, July 1938.
15. Hogan, A. G., and Parrott, E. M.: Anemia in chicks caused by vitamin deficiency. J. Biol. Chem. 132:507-517, Feb. 1940.
16. Wintrobe, M. M.: Antianemic effect of yeast in pernicious anemia. Am. J. M. Sc. 197:286-310, March 1939.
17. Snell, E. E., and Peterson, W. H.: Growth factors for bacteria; additional factors required by certain lactic acid bacilli. J. Bact. 39-273-285, March 1940.
18. Mitchell, H. K.; Snell, E. E., and Williams, R. J.: Concentration of "folic acid." J. Am. Chem. Soc. 63:2284, Oct. 1941.
19. Stokstad, E. L. R.: Some properties of a growth factor for Lactobacillus casei. J. Biol. Chem. 149:573-574, Dec. 1943.
20. Briggs, G. M., Jr., *et al.*: Studies on two chemically unidentified water-soluble vitamins necessary for the chick. J. Biol. Chem. 148:163-172, March 1943.
21. *Op. cit.*, ref. 11, p. 5.
22. *Op. cit.*, ref. 11, p. 46.
23. Zuelzer, W. W., and Ogden, F. N.: Megaloblastic anemia in infancy; common syndrome responding specifically to folic acid therapy. Am. J. Dis. Child., 71:211-243, March 1946.
24. Doan, C. A.; Wilson, H. E., and Wright, C. S.: Folic acid, an essential pan-hematopoietic factor; experimental and clinical studies. Ohio State M. J. 42:139-144, Feb. 1946.
25. Castle, W. B., and Minot, G. R.: Pathological physiology and clinical description of anemias, edited by Henry A. Christian. Oxford University Press, New York, 1936.

The Internist's Consideration of Caudal Analgesia

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The interest displayed by the profession in the use of continuous caudal analgesia has been considerable. Thousands upon thousands of patients have received this nerve blocking type of analgesia and as a result of this extensive use much statistical information has accumulated.

Continuous caudal analgesia not only provides a safe satisfactory method for the relief of pains of childbirth, but has been used extensively as analgesia for surgery performed in areas below the umbilicus. This type of analgesia is also being used a great deal in therapeutics for the treatment of vascular and renal emergencies, and for diagnosis, prognosis, and rehabilitation in peripheral vascular diseases of the lower extremities.

The means by which nerve block is accomplished with continuous caudal analgesia is unique and should be thoroughly understood by those who employ it. An anesthetic drug is introduced into the peridural space by way of the sacral route. By introducing 1.5 per cent metycaine, 2 per cent procaine or .15 per cent pontocaine, etc. in Ringer's solution through an injection apparatus inserted into the sacral canal through the sacral hiatus, access is gained to the peridural space, which is a continuation of the sacral canal. The volume of solution injected determines the height of its rise in this space, and therefore regulates the extent of the resulting nerve block. Medication introduced in this manner must infiltrate through the semiliquid fat contained within the peridural space and find exit through the sievelike arrangement of the sacral and intervertebral foramina. As the anesthetic drug leaves the peridural space it bathes the spinal nerves, and at a point distal to the fusing of the dura mater with the neurolemma, the nerve block is affected. This, of course, differs from spinal anesthesia, in that with the peridural approach a local analgesia is produced in the paravertebral tissues. When an anesthetic drug is deposited in the spinal fluid reservoir by the spinal route, the nerve trunks are more profoundly blocked as they have not acquired their nuerolemma nor do their individual nerve fibers show evidence of a myelin sheath. The understanding of this peridural approach immediately places continuous caudal analgesia in the category of safe procedures when properly administered.

Contraindications for this method are few, and serious complications seldom if ever arise. The contraindications can be listed as follows:[1]

1. Deformities or disease of the spine
2. Syphilis of the central nervous system
3. Tumors which narrow the spinal canal
4. Epilepsy
5. Hysteria
6. Local infection at the needle site
7. Profound anemia
8. Placenta praevia (unless anesthesia is used for immediate casarean section)
9. Abruptio placenta
10. History of sensitivity to anesthetic drug.

The resultant vasomotor effect following caudal block is similar to that effected by spinal anesthesia. The flood gates of the peripheral circulation are the vasomotor fibers of the sympathetic nervous system. In the resting state, there is a balance between the sympatheticomimetic and the parasympatheticomimetic

impulses reaching the arteries, arterioles, venules, and veins of the circulatory system. With this type of nerve control the smooth muscle within the blood vessel walls maintains the residual tone of the vascular bed. Through the vascular bed, the heart, lifting the viscous weight of the circulating blood, labors against the somewhat elastic resistance of the peripheral blood vessel walls, resulting in a force that is measured as blood pressure.[2] Knowing that by means of conduction anesthesia a blocking of the presacral and paravertebral autonomic ganglia may be affected, the uses of continuous caudal analgesia, as well as continuous spinal anesthesia, can be extended into the fields of diagnosis and therapy.

Dripps[3] reported in 1946 that spinal anesthesia, by causing venous dilatation, would result in the blood being pooled in peripheral areas, decreasing venous pressure. He stated that this effect could be known as a bloodless phlebotomy and would be indicated in heart failure with mitral stenosis. Using similar reasoning, conduction anesthesia could be employed in the treatment of pulmonary edema. Using this therapeutic measure, a reduction of venous pressure can be accomplished without decreasing the hemoglobin. It must be remembered that a sudden discontinuance of this anesthesia might allow the angiospastic mechanism of the sympatheticomimetic nerve impulses to predominate again. In cases with cardiac decompensation this result might prove fatal. Hingson[4] reports the use of therapeutic nerve block to overcome the immobility of paralytic ileus and in several cases peristalsis immediately ensued, but at a later period the sympatheticomimetic mechanism predominated, resulting in a greater degree of ileus than was observed originally. These experiences might account for the incidence of paralytic ileus following spinal anesthesia postoperatively.

Regional nerve block should not be discarded as a therapeutic measure because of such sequelae. Instead, the indications are that it must be continued for as long into the recovery period as necessary. The fallacy of single injection therapeutic nerve block is certainly illustrated by the foregoing.

By withdrawing approximately 800 cc. of blood from the general circulation and pooling it in the lower extremities by means of continuous caudal analgesia, the hypertension and cerebral edema found in true eclampsism may be controlled. Caudal analgesia is a valuable adjunct in the treatment of the hepatorenal syndrome found in the toxemias of pregnancy, as well as in renal emergencies where an increase in urinary output is desired. Renal ischemia can be nullified satisfactorily by this type of nerve block, and the urinary output increased as much as threefold by virtue of the relative renal hyperemia produced.

Since World War II many casualties suffering from peripheral vascular trauma of the lower extremities, brought on by prolonged exposure to cold and moisture, have been treated with continuous caudal analgesia with gratifying results. This approach is not a new one. Leriche after World War I first stimulated interest in sympathetic nerve block in the treatment of arterial diseases. Diez[5] in 1925 suggested surgical section of the sympathetic nerves as a treatment for Buerger's and Raynaud's diseases as well as for tabetic foot ulcers. More recent work has been done by Hingson and Southworth[6] with continuous caudal analgesia in the management of peripheral vascular diseases. They report that sympathetic denervation, either temporary with continuous caudal analgesia or continuous spinal anesthesia, prolonged with alcohol, or permanent by means of ganglionectomy is of value in the following circumstances: (1) To aid in establishment of collateral circulation after acute arterial insufficiency, (2) to relieve some of the discomforts associated with chronic occlusive disease, (3) in treatment of acute thrombophlebitis and, with reservations, in the treatment of phlebothrombosis, (4) to relieve certain late vasospastic phenomena which may result from trench or immersion foot.

In addition to vascular changes associated with continuous caudal analgesia there are other altered body mechanisms observed. Other therapeutic uses may be suggested when observing the following conditions after extending analgesia to the eighth thoracic segment: (1) Skin analgesia caudate to the eighth thoracic segment, (2) cessation of sweating over the same nerve distribution, (3) surface temperature increase of 8-20 degrees Fahrenheit, (4) capacity of the vascular bed of the lower trunk increased with marked distention of veins, (5) complete relaxation of the rectal sphincter and the perineal musculature, (6) temporary hypotension probably due, in part at least, to the denervation of the suprarenal gland, (7) hyperperistalsis, (8) obliteration of pain impulses from the uterus, bladder, and adenexa, (9) a progressive relaxation and increasing motor anesthesia of the muscles of the lower trunk and extremities.

CONCLUSIONS

It is believed that continuous caudal analgesia provides a safe and controllable nerve blocking analgesia suitable for the relief of the pains of labor and childbirth as well as a practical analgesia to be employed for surgical procedures performed below the level of the umbilicus.

It is also believed that this method of nerve block can be utilized as a valuable adjunct in diagnosis and treatment.

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REFERENCES

1. Mines, J. L., and Holroyd, E. A.: Use of continuous caudal analgesia in 500 obstetrical cases; preliminary report. Osteop. Med. 3:37-45, June 1945.

2. Hingson, R. A., and Southworth, J. L.: Use of continuous caudal and continuous spinal analgesia in the diagnosis, prognosis and rehabilitation of the peripheral vascular diseases of the lower extremities. Mil. Surgeon 100:474-478, June 1947.

3. Dripps, R. D.: Circulatory changes during spinal anesthesia; their physiological basis. S. Clin. North America 26:1377-1388, Dec. 1946.

4. Hingson, R. A., *et al.*: New horizons in therapeutic nerve block in treatment of vascular and renal emergencies with continuous caudal and continuous spinal analgesia and anesthesia. South. Surgeon 13:580-609, Aug. 1947.

5. Diez, J.: Cervicothoracic and lumbar-sacral sympathectomy in treatment of trophic and gangrenous lesions on extremities. Arch. franco-belges de chir. 28:875-910, Oct. 1925.

6. *Op. cit.*, ref. 2.

Journal A.O.A.
Vol. 47, No. 8

The Hepatorenal Syndrome

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It is only in the last decade that the hepatorenal syndrome has been recognized. At first it was believed to be a postsurgical complication of biliary tract surgery. In more recent years the complication has been reported after virtually all types of surgery. Not only is this syndrome caused by surgical procedures, but it may also develop following exposure to certain hepatotoxic drugs, such as arsenic, arsphenamine, and carbon tetrachloride. It may also occur in association with toxemia of pregnancy, extensive burns, after trauma of the liver, and following prolonged dietary restriction or chronic illness.

In current medical literature the hepatorenal syndrome is defined in several ways. "Hepatic uremia," "liver death," "hepatorenopathy," and the "hepatorenal syndrome" are terms used synonymously although often incorrectly so. I shall define the hepatorenal syndrome as a chain of pathological events arising in the liver, presenting primarily a clinical picture of kidney failure terminating as uremia.

"Liver death syndrome" is one of the incorrectly used synonyms of hepatorenal syndrome. It occurs within the first 48 hours after an operation, while the hepatorenal syndrome occurs from the second to eighth postoperative days. The first is very acute in character and usually terminates fatally, while the hepatorenal syndrome is less rapid in development and, if recognized early, can often be corrected. The symptoms commonly observed in the hepatorenal syndrome may be mild or severe. Two findings that are most apt to arouse the suspicions of the internist are oliguria and hyperpyrexia.

We will now consider the typical clinical course of this postsurgical complication. During an otherwise uneventful convalescence, after the second and usually before the eighth day, there may be an insidious onset of mental lethargy, nervousness, anorexia, and increase in temperature. Oliguria is noted and nausea and vomiting develop. The temperature may rise to 107 F. and dehydration becomes evident. Cyanosis and peripheral circulatory failure may be marked. The arterial pressure may not be altered, but the venous pressure may drop to 1 mm. water pressure. Cold moist skin is a usual observation. In the most severe cases abdominal distention develops; jaundice and moderate edema may appear. Oliguria progresses to anuria, lethargy to coma, followed by convulsions and impending death.

Laboratory determinations are significant. The urinary findings usually include high specific gravity, but not as high as would be expected in the presence of the marked oliguria. Often the specific gravity is not over 1.010. Albuminuria and red blood cells in the urine are usually found. The blood nonprotein nitrogen is elevated frequently to 100 mg. per cent and in the extreme case to 400 mg. per cent. The blood creatinine is most often elevated. In cases of hepatorenal syndrome due to prolonged chronic illnesses or dietary restrictions, the symptoms and findings may be much the same, although usually more insidious in onset. When due to thyrotoxicosis, toxemia of pregnancy, severe burns, or hepatotoxic drugs the symptoms may be more dramatic. An excellent thought to remember is: Whenever the symptoms of uremia occur in a patient with no previous signs of renal disease, the existence of the hepatorenal syndrome should be considered.

The pathogenesis of this syndrome is not too clear at present. Different theories are expounded as to the mechanism of development. One theory is that the liver fails to detoxify noxious substances which in turn damage the kidneys and produce secondary renal toxemia. Another is that some dysfunction of the liver disturbs the storage and distribution of certain electrolytes resulting in azotemia and decreased urinary output. Also it has been mentioned that toxins are produced by necrotized liver cells which account for the disturbed relationships.

The functions of the liver which seem to be most impaired in the hepatorenal syndrome are detoxification and neutralization. No specific toxin has as yet been isolated. Tissue autolysins may result from necrosis or trauma. Intra-abdominal temperature and pressure changes during surgery have been suspected of being factors in producing liver inefficiency. The anesthetic agents, especially those detoxified in the liver, may be factors. Anoxemia, whether due to anesthesia or circulatory insufficiency, may be the initiating influence. Functionally the liver and kidneys are closely related. If the liver loses its power of detoxification and neutralization, the kidneys probably attempt to take over some of this function. This exposes the kidneys to pathologic strain and degeneration may result.

One of the recognized causes of prerenal azotemia is the hepatorenal syndrome. Since one of the predominating findings in hepatorenal syndrome is an elevated nonprotein nitrogen, I will discuss this mechanism. It has been found in acute affections of the liver that there is increased protein destruction which would elevate the nonprotein nitrogen of the blood in kidney insufficiency. It is known that comparatively large amounts of urea can be administered over a period of time with very little change in the blood levels if kidney function is good. Another constant finding in this syndrome is oliguria which may proceed to anuria. The specific gravity of the urine is usually low in proportion to the volume. A fundamental symptom of impairment of renal function is a low concentration of the urine disproportionate to the volume. Some of the indirect factors concerned in kidney insufficiency are hypochloremia, low arterial pressure, toxic nephritis, and alkalosis.

A primary factor in prerenal azotemia of almost any cause is decreased blood flow through the kidneys. Circulatory failure which is usually present is not due to cardiac insufficiency, but is a peripheral circulatory failure which results in diminished venous return to the heart. In most instances this is believed to indicate a decreased circulating blood volume. A drop in cardiac output results in decreased blood flow through the organs including the kidneys. Many physiological experiments have shown that decreased renal blood flow is reflected in decreasing urinary output.

In summarizing the pathogenesis, the impaired detoxifying and neutralizing functions of the liver can be considered as primary. The kidneys undergo patho-

logical strain due in part to dehydration, hypochloremia, and toxins. Increased protein catabolism exists. Probably the principal factor is decreased blood flow through the kidneys resulting in oliguria and azotemia.

When considering the pathology of the hepatorenal syndrome, it is surprising to find little or no change in the kidneys, cloudy swelling being the chief gross finding. There is often some epithelial degeneration of the convoluted tubules found on microscopic examination. Grossly the liver appears congested and fatty deposits are seen. On microscopic examination varying degrees of necrosis are found in the central cells of the lobule and about the bile ducts. Focal hemorrhage and fat deposits are seen. Such cases have been classified as uremia with intact kidney.

Thus far the clinical symptoms, diagnosis, pathogenesis, and pathology of this syndrome have been discussed. Now its treatment will be considered. The earlier in the course the symptoms are recognized, the more effective will be the treatment. In many instances if the disease is anticipated, the syndrome will not develop. Before the internist transfers his patient who is to undergo an elective operation to the surgeon, he should have as accurate a picture as possible of the functional state of the liver. Adequate laboratory work should be done to evaluate hepatic efficiency and clinical findings should be carefully interpreted. If the surgeon does not seek the opinion of the internist he, then, is responsible for this interpretation. Preceding surgery, a diet high in protein, high in carbohydrate, and low in fat is good therapy. The "Ravdin liver diet" which consists of 20 per cent protein, 75 per cent carbohydrate, and less than 5 per cent fat is well recommended. Such a diet stores adequate glycogen in the liver and protects against immediate hypoproteinemia. Any existing dehydration must be overcome. Adequate vitamins are advocated.

If, after surgery, certain symptoms of hepatorenal syndrome become evident, immediate intravenous injection of 5 or 10 per cent dextrose in normal saline should be given. This is the first step toward relieving the peripheral circulatory failure. The dextrose aids the liver in its detoxifying functions.

Osteopathic manipulative therapy affords valuable assistance in correcting the peripheral circulatory stasis. The mechanism of circulatory balance is affected through the vasoconstrictor nerves. This is accomplished by applying pressure intermittently along the spinal column, which stimulates the reflex constrictor nerves and brings about some contraction in the blood vessels of the skin and muscles of the back. This treatment should be given for short periods only as continuation of the stimulation results in the dilators overcoming the action of the constrictors. Gentle massage of the extremities for short periods will also accomplish an improvement in the circulation.

When the fully developed syndrome is present, the treatment should be more heroic. Blood transfusions may be beneficial. Diuretic agents such as aminophyllin and salyrgan-theophylline often relieve the oliguria. In the presence of anuria, intravenous fluids must be given cautiously if at all. Abdominal distension may be relieved by the Miller-Abbott tube, which would also be useful in giving intrajejunal fluids and nourishment. In most cases of hepatorenal syndrome which do not occur postoperatively, the general therapeutic procedures just mentioned should be instituted as indicated.

During recent years considerable research has been accomplished with the amino acids. It has been discovered that methionine or cystine plus choline exerts a protective mechanism against the effects of hepatotoxins. Necrosis has been prevented experimentally by methionine or cystine plus choline. Methionine has been found to be the specific agent for prevention and repair of liver damage. If methionine is given alone it seems to afford better protection to the liver than if administered as total protein, for it is then more available to the liver and not used in generalized tissue repair.

In the prophylactic treatment of the hepatorenal syndrome, the feeding of methionine should afford rapid protection, especially in the protein-depleted patient. In the case presenting the established syndrome, the addition of methionine to the treatment may hasten the recovery. For the patient too ill to be given oral medication a 3 per cent solution of methionine can be administered intravenously.

SUMMARY

1. Hepatorenal syndrome may occur as a postoperative complication, in association with severe burns, toxemia of pregnancy, malnutrition, chronic illnesses, thyrotoxicosis, or as a result of hepatotoxic drugs.

2. The symptoms are usually those of uremia or impending uremia.

3. Decreased blood flow through the kidneys is an important factor in producing the azotemia.

4. Diminished liver functions of detoxification and neutralization are the initiating disturbances.

5. Treatment is effective if instituted early.

6. Methionine is a valuable adjunct in treatment.

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REFERENCES

Barclay, J. A., and Cooke, W. T.: Hepatorenal syndrome treated with choline chloride. Lancet 2:458-460, Oct. 13, 1945.

Beams, A. J.: Treatment of cirrhosis of liver with choline and cystine. J. Am. M. A. 130:190-194, Jan. 26, 1946.

Best, C. H., and Taylor, N. B.: Physiological basis of medical practice, Ed. 4. W. Wood & Co., Baltimore, 1945, pp. 557-563, 602, 603.

Downing, C. H.: Osteopathic principles in disease. Ricordo J. Orozco, San Francisco, 1935, pp. 42-49.

Fishberg, A. M.: Hypertension and nephritis. Ed. 4. Lea & Febiger, Philadelphia, 1939, pp. 40, 42, 55-66.

Lichtman, S. S.: Diseases of the liver, gallbladder and bile ducts. Lea & Febiger, Philadelphia, 1942, pp. 235-238, 351.

Mason, R. L., and Zintel, H. E., eds.: Preoperative and postoperative treatment. Ed. 2. W. B. Saunders Co., Philadelphia, 1946, pp. 381-383.

Nelson New loose-leaf medicine, Vol. V, Diseases of the digestive system, muscles, bones and joints. Thomas Nelson and Sons, New York, 1941.

Journal A.O.A.
Vol. 47, No. 8

The Role of the Liver and Biliary Passages in Heart Disease

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Clinical evidence and investigation definitely establishes the view that disease of the liver and biliary passages does cause heart disturbances. This clinical entity has long been recognized but there is no valid evidence to support the view that liver and biliary tract disease cause coronary disease. It is possible that similar metabolic faults, infections, or errors in the regimen of living may be factors in the production of *both* biliary tract disease and heart disease, but this view, however reasonable, is not supported by actual evidence.

If there is a common etiological factor for cholecystitis and coronary disease, it is logical to expect women with their high incidence of cholecystitis and cholelithiasis to have coronary artery disease more often than men. One hundred autopsies on patients under the age of 40 dying with coronary heart disease, with and without infarction, were reported by Glendy, Levine, and White[1] in 1937. Ninety-six were males and only four females. This finding is significant in relation to coronary disease, but unfortunately there was no report as to the condition of the liver and biliary passages.

In 1924 Straus and Hamburger[2] reported cases in which the removal of stone-bearing gallbladders cleared up long standing disturbances of cardiac rhythm. In 1935 Fitz-Hugh and Wolferth[3] reported six cases with typical coronary patterns in the electrocardiograms, all of which returned to normal after the removal of stone-bearing gallbladders. As early as 1909 Babcock[4] cited many cases of organic heart disease which were benefited by the removal of diseased gallbladders. Breyfogle[5] in a statistical analysis of 1,493 autopsies concluded there was a striking and positive association, regardless of age and sex, between gallbladder disease and coronary artery disease.

The literature contains many more records of cases in which the pain of angina pectoris has been relieved by the removal of a gallbladder filled with stones. The coronary sclerosis was not benefited, but the relief of symptoms appeared to be due to the removal of reflex nerve irritation from the diseased gallbladder.

However, relief of substernal or precordial pain after gallbladder surgery does not prove that the patient was relieved or cured of angina pectoris. Before arriving at such a conclusion it is necessary to distinguish between the anginal syndrome and conditions due to biliary tract disease and other conditions as cardiospasm, hiatus herniae, thoracic arthritis, etc., which may mimic it, since there is a vast difference in the results to be expected in the two groups. Another condition which should be considered is spasm of the sphincter of Oddi following cholecystectomy.

Wakefield[6] reports the demonstration electrocardiographically of an increase in heart rate, the occurrence of extrasystoles, and a prolonged auriculoventricular conduction time in patients with distended gallbladders. Also a shortened P-R interval has been seen and occasionally the P wave disappeared entirely. Complete heart block occurred in one patient and in another there was a ventricular tachycardia of short duration. T_2 was depressed to the isoelectric level in many instances, but inversion of T_2 did not occur. These changes were produced by the rapid injection of 30 to 50 cc. of normal saline into the fundus of the gallbladder in twenty-five patients at the time of laparotomy. In those cases where a stone was jammed into the cystic duct the gallbladder could be greatly distended. When this distention was relieved (by suction with the syringe), the cardiac disturbances immediately disappeared. Experiments on animals have shown that the heart is not affected by distention of the gallbladder when both vagi were sectioned or when paralyzing doses of atropine were given.

The nerve supply to the gallbladder is derived from the phrenic, the vagus, and from the splanchnics through the celiac plexus whose fibers arise from the cord from the sixth thoracic to the first lumbar segments. The vagus and phrenic nerves also have branches which supply the heart as well as the gallbladder. Woollard[7] has demonstrated by histological studies that the coronary arteries are richly supplied by both vagal and sympathetic fibers. The sympathetics supplying the heart arise from the first to the fifth or sixth thoracic segments and pass upwards through the lateral chain ganglion to the stellate ganglion and thence to the heart.

The superior, middle, and inferior cervical ganglion from which the superior, middle, and inferior cardiac nerves receive cord connections through the gray rami complete the sympathetic nerve supply of the heart.

With these various pathways for reflex nerve impulses to travel between the liver and biliary passages and the heart, the result of nerve stimulation of one organ and its effect on the other is explainable. With these nerve connections it can be readily understood that pathological processes of one organ can cause symptoms referable to the other as well as to other parts of the body.

In the metabolism of fats the liver carries on (1) the destruction of fatty acids, (2) the formation of sterols, (3) the hydrolysis of cholesterol esters, (4) the hydrolysis of fats, (5) the formation of bile acids, and the synthesis and destruction of phospholipids.

Disturbed fat metabolism may be an etiological factor in gallbladder and coronary artery disease. Various investigators have produced atherosclerosis in rabbits by feeding them diets high in cholesterol. This work has been confirmed by numerous investigators, including Bailey[8] and Leary.[9] Some investigators do not agree that the cholesterol atherosclerosis of rabbits is identical with atherosclerosis of human beings. However, the lesions are similar and it may be possible that any existing differences may be due to the difference of cellular and tissue reactions in the two dissimilar species of animals.

With the feeding of a high lipoid diet there is a large accumulation of cholesterol esters in the liver. With a high cholesterol diet the resultant increase in cholesterol esters may be a protective reaction suggesting that the ester is less harmful than free cholesterol. Free cholesterol exists chiefly in the corpuscles of human blood while in the plasma more than half is present as the ester. The free cholesterol content of tissue normally remains almost constant, while the esters are subject to considerable variation in amount.

In arterial calcification the fatty or atheromatous areas of the intima of the vessel actually consist of deposits of cholesterol esters, which finally become calcified, resulting in a thickening of the intima with increased connective tissue. The degeneration of the elastic tissues of the arteries, which is probably the primary change in the formation of arteriosclerosis, is attributed to wear and tear from repeated stretching and recoil of the arterial wall.

The facts indicating that the liver plays an essential role in the metabolism of fat are: (1) The fatty acids combined as phospholipids and glycerides are more unsaturated than fatty acids found elsewhere. (2) Under many conditions neutral fat or cholesterol esters accumulate in the liver to a greater extent than in other tissues. (3) The liver is the principal if not the only site of formation of ketone bodies. (4) The rate of phospholipid turnover in the liver is greater than in any other tissue with the possible exception of the intestinal mucosa during fat absorption.

Various conditions which result in an excess of fat in the liver are as follows:

1. Dietetic, e.g., starvation, diets rich in fat or cholesterol, and diets deficient in choline or other lipotrophic factors
2. Pregnancy, pernicious anemia, and diabetes
3. Infectious processes
4. Poison, e.g., phosphorus, chloroform, benzol, etc.
5. Injection of substances obtained from the anterior pituitary gland.

The amount of fat in the liver at any one time depends on the rate at which the liver is able to take up fat from the blood, the rate at which the liver can handle fat by direct oxidation in the liver cells, and possibly that fat may be synthesized in the liver from other materials, such as carbohydrate and protein.

Choline has been shown to be an important dietary factor which exerts a profound effect on the storage of fat in the body and also on other physiological mechanisms. When choline is not available, large amounts of fat accumulate in the liver. There is evidence that choline will prevent cirrhosis, that cystine prevents necrosis, and methionine, which aids in the formation of choline in the body, prevents both necrosis and cirrhosis. The acute effects of chloroform poisoning on the liver in protein depleted dogs is diminished or prevented by the administration of methionine or choline plus cystine.

Thus, disturbed fat metabolism, whether it is due to lack of choline or other lipotrophic factors in the diet or whether it is due to dietetic measures, wasting diseases, infectious processes, or poisons, may have a bearing on the heart as related to coronary artery disease and myocardial breakdown. It is also likely and seems more possible that the same factors, whether infection or a change in lipoid-cholesterol metabolism, are important in producing cholelithiasis.

Despite numerous attempts to demonstrate that hypercholesterolemia plays an important part in the development of atherosclerosis, it has not been satisfactorily established according to Joslin[10] and Rosenthal.[11] However, other authorities believe that the hypercholesterolemia of diabetes mellitus is a factor of fundamental importance in contributing to the development of arteriosclerosis in patients with this condition. According to Bruger and Poindexter,[12] the development of degenerative disease is, as a rule, followed, and not preceded by hypercholesterolemia. They believe that the increase in plasma cholesterol in these conditions should be regarded as a complication rather than an etiological factor.

Carbohydrate metabolism with the storage of glycogen, protein metabolism with the deamination of amino acids and formation of urea, and purine metabolism with the formation of uric acid are liver functions which if not properly carried on have an influence on the individual liver cells. These cells have multiple functions and the changing of any one function by a disease process may and probably does alter the effect of the other functions of the cells. When the detoxifying function of the liver is depressed as a result of hepatic disease the kidneys excrete the toxic substances of bacterial action on protein in the intestinal tract.

The liver maintains normal blood sugar by removing glucose from the blood and laying it down as glycogen. When blood sugar is low, as after administration of insulin, there are changes in the electrocardiogram typical of coronary artery disease, even in young people. In heart failure during congestion of the liver the blood sugar may go so low that the patient develops dyspnea, sweating, and other symptoms of shock; all relieved by intravenous glucose. Untreated diabetic or poorly treated diabetic patients, even as young as 20, have diabetic retinitis with vessel changes, such as early sclerosis. These diabetic patients also have fatty livers. The incidence of coronary artery disease in diabetic women is very high. It is nearly the same as in men and, statistically, is significantly higher than in nondiabetic women. Some investigators believe that diabetes mellitus is primarily a disease of the liver.

The gallbladder as a focus of infection and the effects of retained bile constituents are also factors which some authorities believe to be of etiological importance in the production of heart disease. It has been emphasized that chronic infection of the biliary tract in many cases of gallstone disease leads to myocardial degeneration and secondary sclerosis, and thus adds to the risk of the occurrence of angina pectoris. Weiss[13] and others have also referred to the toxic effect of the diseased gallbladder on the myocardium and state that the Streptococcus is commonly the causative organism.

SUMMARY

The evidence that gallbladder disease causes heart disease rests almost entirely on the effects of gallbladder surgery on cardiac symptoms and behavior. It is well established that cardiac decompensation may occasionally be relieved, that various disturbances of cardiac rhythm may be abolished, that attacks of angina pectoris may disappear, and that electrocardiographic changes may promptly return to normal after removal of the diseased gallbladder. Available evidence indicates that gallbladder disease and heart disease coexist more often than would be expected from the incidence of the two diseases. There is no actual evidence to support the view that similar metabolic faults, infections, or errors in the regimen of life are factors in the production of both conditions, except for the high incidence of coronary artery disease in diabetic women. The only certainty in this controversial topic is that pain and symptom reflexes between the two organs are definitely established and that abnormal nerve mechanisms of the heart are relieved by gallbladder surgery in a small percentage of the cases.

REFERENCES

1. Glendy, R. E.; Levine, S. A., and White, P. D.: Coronary disease in youth, comparison of 100 patients under 40 with 300 persons past 80. J. Am. M. A. 109:1775-1781, Nov. 27, 1937.

2. Straus, D. C., and Hamburger, W. W.: Significance of cardiac irregularities. J. Am. M. A. 82:706-708, March 1, 1924.

3. Fitz-Hugh, T., Jr., and Wolferth, C. C.: Cardiac improvement following gallbladder surgery. Ann. Surg. 101:478-481, 1935.

4. Babcock, R. H.: Chronic cholecystitis as a cause of myocardial incompetence. J. Am. M. A. 52:1904-1911, June 12, 1909.

5. Breyfogle, H. S.: Frequency of coexisting gallbladder and coronary artery disease. J. Am. M. A. 114:1434-1437, April 13, 1940.

6. Wakefield, H.: Association of gallbladder disease with heart disease: clinical and experimental observations. M. Clin. North America 31:161-171, Jan. 1946.

7. Woollard, H. H.: Innervation of heart. J. Anat. 60:345-373, July 1926.

8. Bailey, C. H.: Atheroma and other lesions produced in rabbits by cholesterol feeding. J. Exper. Med. 23:69-86, Jan. 1916.

9. Leary, T.: Experimental atherosclerosis in rabbit compared with human (coronary) atherosclerosis. Arch. Path. 17:453-492, April 1934.

10. Joslin, E. P.: Treatment of diabetes mellitus. Ed. 5. Lea & Febiger, Philadelphia, 1935.

11. Rosenthal, S. R.: Studies in atherosclerosis: chemical, experimental and morphologic; roles of cholesterol metabolism, blood pressure and structure of aorta; fat angle of aorta (F.A.A.), and infiltration-expression theory of lipoid deposit. Arch. Path. 18:473, Oct.; 660, Nov. 1934.

12. Bruger, M., and Poindexter, C. A.: Relation of plasma cholesterol to obesity and to some of the complicating degenerative diseases (diabetes mellitus, essential hypertension, osteo-arthritis and arteriosclerosis). Arch. Int. Med. 53:423-434, March 1934.

13. Weiss, S.: Diseases of liver, gallbladder ducts and pancreas. P. B. Hoeber, Inc., New York, 1935.

ADDITIONAL REFERENCES

Allen, E. V.; Barker, N. W., and Hines, E. A.: Peripheral vascular diseases. W. B. Saunders Co., Philadelphia, 1946.

Clark, W. E.: Gastrointestinal conditions simulating or aggravating cardiovascular disease. J. Am. M. A. 128:352-356, June 2, 1945.

Leary, T.: Atherosclerosis, important form of arteriosclerosis, metabolic disease; eleventh Ludvig Hektoen lecture of Frank Billings Foundation of Institute of Medicine of Chicago. Proc. Inst. Med. Chicago 10:289-300, June 15, 1935; also, J. Am. M. A. 105:475-481, Aug. 17, 1935.

Pottenger, F. M.: Symptoms of visceral disease. Ed. 6. C. V. Mosby Co., St. Louis, 1944.

Rabinowitch, I. M.: Arteriosclerosis in diabetes; relationship between plasma cholesterol and arteriosclerosis; effects of high carbohydrate-low calorie diet. Ann. Int. Med. 8:1436-1471, May 1935.

Stroud, W. D., *et al.*: Possible relationship between gall bladder disease and coronary disease. Tr. A. Am. Physicians 54:269-276, 1939.

Wolferth, C. C.: Relationship between biliary tract disease and heart disease. J. Mt. Sinai Hosp. 8:1121-1127, Jan.-Feb. 1942.

The Role of Abnormal Cardiovascular Dynamics in Liver Disease

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There is much to be read concerning cirrhosis of the liver, which is the end result of a progressively destructive process, but relatively little to be learned concerning factual etiology. It is unfortunate that so much voluminous material is available concerning the outcome of a disease and yet so little information obtainable as pertains to its beginning.

With this in mind, we shall consider some anatomical and physiological features of the vascular supply of the liver, the pathological changes which occur in this circulatory mechanism, and bring about some degree of correlation between these pathological changes producing disturbed physiology of the liver and some of the clinical features observed in cardiovascular disease. The only purpose of this presentation is to alert us to the possibility of the coexistence of hepatic dysfunction with some of the more common circulatory disturbances, that it may be dealt with while yet reversible.

THE VASCULAR SUPPLY OF THE LIVER

Aside from the lung, the liver is the only organ which receives an arterial and venous supply of blood, namely, from the hepatic artery and portal vein. The hepatic artery, while contributing only about 25 per cent of the blood volume, has been shown by Barcroft and Shore[1] to provide the predominant supply of oxygen. It supplies not only the supporting structure of the liver, but also the parenchyma, although to a lesser degree than the portal vein. The portal vein, which collects from the splanchnic area blood which is heavily laden with the products of digestion, transports about 75 per cent of the hepatic blood volume.

Lichwitz,[2] citing the work of Grant and Bland, makes the important observation that the mechanism for movement of portal blood is provided by numerous arteriovenous anastomoses in the mucous membrane of the small intestine. By virtue of these anastomoses, with each heart beat, millions of shots of arterial blood enter the portal system and not only move the portal blood but also provide the means by which the portal system delivers oxygen to the hepatic parenchyma. The portal vein enters the hepatic lobule at its periphery, divides into smaller veins, and finally forms the hepatic sinusoids which lie between the liver cords. The sinusoids converge toward the center of the lobule and unite to form the central vein. After traversing the lobule, the central vein opens into the sublobular veins which end in the hepatic veins, which eventually empty into the inferior vena cava.

Although the hepatic artery supplies the walls of the bile ducts and portal vein within the capsule of Glisson, there is no admixture of bloods. But Moschcowitz,[3] citing the work of Olds and Stafford, emphasizes the importance of arteriovenous communication brought about by an extracapsular anastomosis between capillary branches of the hepatic artery and the hepatic sinusoids. This point of communication having been anatomically established it is understood why blood injected into the hepatic artery escapes with ease into the portal vein and vice versa, although to a lesser degree. Since this is the case, the pressure within the hepatic artery being about the same as in the brachial, about 130 mm. of mercury,[4] and the pressure within the portal vein estimated at between 6 and 12 mm. of mercury,[4] there must be somewhere within the liver itself a mechanism which neutralizes these pressures.

Moschcowitz[3] has clearly pointed out that this equalization of pressure between the hepatic artery and the portal vein within the liver is accomplished for the most part by the intercommunicating capillary network whereby blood flows from a small basin to one four or five times as great, from a conducting system of narrow vascular channels to those of slightly larger diameter, and finally to arteriovenous communications interposed between the terminal ramifications of the two vessels. The peripheries of the hepatic lobules are, therefore, supplied by either arterial or venous blood and to a lesser degree by an admixture of both bloods.

It must be remembered that this delicately balanced mechanism is profoundly influenced by any factor which alters the vasomotor stability throughout the body. The circulatory supply to the liver must be particularly responsive to these vasomotor changes if it is

to fulfill its function as a blood depot as well as maintain the supply of blood to the right heart, and on a moment's notice integrate these functions with demands put upon it by the reaction of other systemic vessels.

ALTERATIONS IN CIRCULATORY DYNAMICS

Long-continued alterations in circulatory dynamics of the liver must, temporarily at least, result in decompensation of this delicately balanced mechanism which equalizes the pressure between the hepatic artery and portal vein. Increased velocity of blood flow through the liver, whether or not it is associated with an increase in blood volume, will result in forward failure of this mechanism, while increased pressure within the venous circuit retards the velocity of blood flow through the liver, and by obstructing the blood supply through the hepatic artery, results in backward failure. Whether the failure is forward or backward, the net result is failure of the portal system to carry blood away as fast as it is delivered by the hepatic artery; stasis ensues and there is a failure of hepatic respiration. Incumbent upon this stasis there is dilatation of the neighboring capillaries, finally resulting in venocapillary sclerosis, producing the peculiar cirrhotic architecture of long-standing or repeated bouts of congestive failure and the cirrhosis found in diffuse toxic goiter.[3]

A most important point has already been alluded to, that being the failure of hepatic respiration and anoxia. This anoxia results in inefficiency of carbohydrate metabolism; the hepatic cells are infiltrated with fat which replaces the normal glycogen, and the resistance of the hepatic cell is lowered to further insult by any hepatotoxic agent. This state is definitely reversible and very amenable to therapy. However, the hypoxemia, particularly if marked, may result in tissue necrosis and cirrhosis very rapidly although it is usually preceded by the fatty infiltration mentioned previously.

If these interruptions of the equalizing mechanism between the hepatic artery and portal vein are maintained long enough and occur often enough, the resultant damage is repaired by round cell infiltration and fibrosis with the end result of cirrhosis. It might be said that the liver pathology resulting from changes in cardiovascular dynamics invariably ends in portal obstruction.

CLINICOPATHOLOGICAL CORRELATION

Conditions producing forward failure of the mechanism which equalizes the pressure between the hepatic artery and the portal vein are:

Toxic Goiter.—In Moschcowitz's[3] series of 31 autopsies on patients who were diagnosed as having diffuse toxic goiter during life, 11 were found to have cirrhosis, an incidence of 35.5 per cent. The importance of this finding cannot be denied.

The writer is definitely of the opinion that the increased velocity of blood flow, as measured by the circulation time, results in venocapillary sclerosis, hepatic dysfunction, and ultimate cirrhosis. This is indeed in sharp contrast to the opinion held as recently as 1933 by Rössle[5] who ascribed the pathogenesis of the cirrhosis in this condition to "serous hepatitis" of toxic origin.

This type of cirrhosis differs from cardiac cirrhosis in that it is noticeable topographically about the periphery of the hepatic lobule while in the latter the pathology is most pronounced about the central vein. Should failure be superimposed upon thyrotoxicosis, both types would, of course, be present. These changes undoubtedly account for the occasional appearance of jaundice, the fasting hyperglycemia, and decreased glucose tolerance observed in hyperthyroidism. Their severity is usually in direct proportion to the duration of the disease.

Arteriosclerosis.—If Moschcowitz's[3] conception of venocapillary sclerosis, as the pathogenic factor in hepatic cirrhosis of diffuse toxic goiter, is accepted, cannot we assume that the same process may take place in arteriosclerosis, particularly diffuse arteriolar sclerosis or diffuse hyperplastic sclerosis which has a particular predilection for the smaller arteries of the viscera? This may or may not be associated with hypertension. This diffuse process probably plays a threefold part in producing hepatic dysfunction: First, by elevation of the pressure within the small arterioles and ultimate decompensation of the arteriovenous balance; second, by producing a hypoxemic state since the lumen of the vessel is markedly narrowed; and third, since the process also involves the small vessels of the intestine, there is interference with the arterial propelling mechanism and alterations in portal pressure must result. In these individuals digestion is impaired, absorption is poor, and the hepatic cell actually derives insufficient vitamin, protein, and carbohydrate supply. Incumbent upon this poor nutritive supply, fatty infiltration results, followed by cirrhosis.

It would follow that the diet in patients with arteriosclerosis should be well balanced and contain liberal amounts of the substances which serve to "protect the liver." It should contain 1 gram of protein per kilogram of body weight, liberal quantities of carbohydrate, and be low in fat.[6] If it is true that the vitamin B stores in the liver are the outer defense of the "fixed" vitamin B in the heart and nervous system, these individuals should receive supplemental vitamin B complex.

Anemia.—Anemia, particularly the Addisonian type, plays a twofold part in producing hepatic dysfunction: First, the hypoxemia resulting in tissue necrosis and fibrosis which is most noticeable about the central vein; and second, the constancy of increased velocity of blood flow which is second only to that of hyperthyroidism,[3] and which also produces venocapillary sclerosis and consequent imbalance between the hepatic artery and portal vein.

Conditions producing backward failure of the mechanism which neutralizes the pressure between the hepatic artery and portal vein are:

Hypertension of the Pulmonary Circulation.—This results in back pressure transmitted through the right atrium, down through the inferior vena cava into the hepatic veins, thence, to the central veins and finally into the radiating sinusoids of the lobule. The earlier lesion constitutes chronic congestion or nutmeg liver and the changes are reversible, but as the hypoxemia and the arteriocapillary sclerosis progresses, not only in the liver but also in the pulmonary arteries and alveolar capillaries, destruction and fibrosis of hepatic tissue result in the much less reversible cardiac cirrhosis. To reiterate, in this backward failure of the intrahepatic equalization of pressures, the pathological changes are predominant about the central vein while if the failure is forward, the changes are most marked about the periphery. However, in many instances, one is superimposed upon the other.

Elevation of pressure within the pulmonary circulation may result from obstruction as in pulmonary emphysema or intrathoracic tumors. However, the most common cause of backward failure is myocardial failure resulting from mitral and tricuspid insufficiency, myelomalacia, and disturbances of the pericardium,

particularly constrictive pericarditis.[7] For this reason, this part of the discussion will be limited to clinical manifestations of congestive failure which are attributable to disturbed hepatic function resulting therefrom.

Hepatic Enlargement.—While this is one of the most frequent signs of cardiac failure, it may be absent although a rather marked degree of hepatic functional impairment is present. The size of the liver may not give a correct idea of either its anatomical or functional impairment.[8] In this connection, Mateer and others[9] have reviewed recently the sensitivity of various liver function tests. They concluded that the cephalin test, as rendered more reliable by Neefe and Reinhold, now represents the most satisfactory single screening test available for the detection of early hepatic impairment. Its technic is simple and it is an exceedingly sensitive index of parenchymal hepatic impairment. These writers evaluate the 45 minute 5 mg. per kilogram, photoelectric sulfobromophthalein test as being the most valuable single test available since it is a true test of hepatic function with a moderately simple technic and has a wide range of use and value.

Of course, as hepatic engorgement continues and the liver actually enlarges, there is discomfort and tenderness in the upper right quadrant, and as portal obstruction develops from the cirrhotic process, it manifests itself in the form of indigestion, gaseous distention, hematemesis from esophageal varices, rectal bleeding from hemorrhoids, etc.

Jaundice.—This condition is fairly common in cardiac decompensation although it may be masked by cyanosis. However, even in the absence of cyanosis, hyperbilirubinemia may be present without clinical evidence of jaundice. This brings up the question of the cause of the hyperbilirubinemia.[10] There are two opposing schools of thought: One holds that it is due to the excessive hemoglobin liberated from areas of pulmonary infarction and stasis within the reticuloendothelial system; the opposing school is of the opinion that it is due to hepatic functional impairment resulting from stasis and anoxemia.

Since the observation has been made that bromsulfalein retention may be noted before the hyperbilirubinemia, we might safely draw the conclusion that hepatic functional impairment in most instances antedates the excessive production of bilirubin, and that if it were not for this impairment it would be able to metabolize the pigment. This is substantiated by Jolliffe's[8] series of 16 patients with cardiac decompensation; not all were visibly jaundiced, but 93 per cent showed laboratory evidence of impaired liver function.

An accessory factor, as pointed out by Bockus,[11] is the diminution in blood flow through the liver occurring in association with heart failure, whereby the pigments are delivered more slowly to the liver and are allowed to accumulate in the blood. In any event we may conclude that jaundice in cardiac failure is primarily dependent upon hepatic functional impairment. The jaundice is, at first, of the retention type giving an indirect van den Bergh reaction, and as damage increases with anoxemia and necrosis it becomes the regurgitation type giving a direct or biphasic reaction.

EDEMA AND ASCITES

The mechanism of edema and ascites in congestive failure has been the object of much discussion and intensive investigation, and it is not within the realm of this presentation to enter into the controversy as to whether it is the increased venous pressure or sodium chloride retention that provides the original basis for accumulation of fluid in the interstitial tissues. Suffice it to say, admitting the importance of these two factors, that the coexistent hypoproteinemia not only facilitates but also to a great extent maintains the edema. The protein deficit is noted in the albumin fraction while the globulin shows a corresponding increase, bringing about reversal of the albumin-globulin ratio. The albumin molecule, being smaller, exerts the maximum osmotic pressure, the loss of which combined with increased venous pressure and increased electrolyte concentration of the interstitial tissues allows fluid to pass from the intracapillary to the extracapillary spaces so that actually the patient is "brine-logged" and suffers from the lack of plain water.

The hypoalbuminemia is due, in part, to increased plasma volume. It is also contributed to by prolonged albuminuria, decreased protein intake due to impaired digestion, diminished absorption from the edematous intestinal mucosa, and impaired protein synthesis due to hepatic malfunction.[12]

It is, of course, paramount in therapeutics that the primary condition of cardiac failure be dealt with by all the means at the physician's disposal. But it is also very important that he add to his armamentarium, in the consideration of edema, the proper therapeutic approach in the restoration of normal hepatic function and electrolyte balance.

CONCLUSION

An attempt has been made to present a reasonable anatomical and physiological basis for the production of hepatic disease in abnormal cardiovascular dynamics.

In dealing with cardiovascular disease the more sensitive liver functions tests should be used freely for screening purposes to detect early hepatic functional impairment, so that therapy directed to the underlying conditions may embrace means to prevent further damage.

915 N. Second St.

REFERENCES

1. Barcroft, J., and Shore, L. E.: Gaseous metabolism of the liver; in fasting and late digestion. J. Physiol. 45:296-306, 1912-1913.

2. Lichtwitz, L.: Functional pathology. Grune & Stratton, New York, 1941, p. 524.

3. Moschcowitz, E.: Pathogenesis of cirrhosis of the liver occurring in patients with diffuse toxic goiter. Arch. Int. Med. 78:497-530, Nov. 1946.

4. Macleod's Physiology in modern medicine, edited by Philip Bard. C. V. Mosby Co., St. Louis, 1941, p. 503.

5. Rössle, R.: Uber die Veränderungen der Leber bei der Basedowschen Krankheit und ihre Bedeutung für die Entstehung anderer Organsklerosen. Virchows Arch. f. path. Anat. 291:1-46, 1933.

6. Wohl, M. G., ed.: Dietotherapy; clinical application of modern nutrition. W. B. Saunders Co., Philadelphia, 1945, p. 507.

7. Hyman, H. T.: Integrated practice of medicine. W. B. Saunders Co., Philadelphia, 1946, p. 1957.

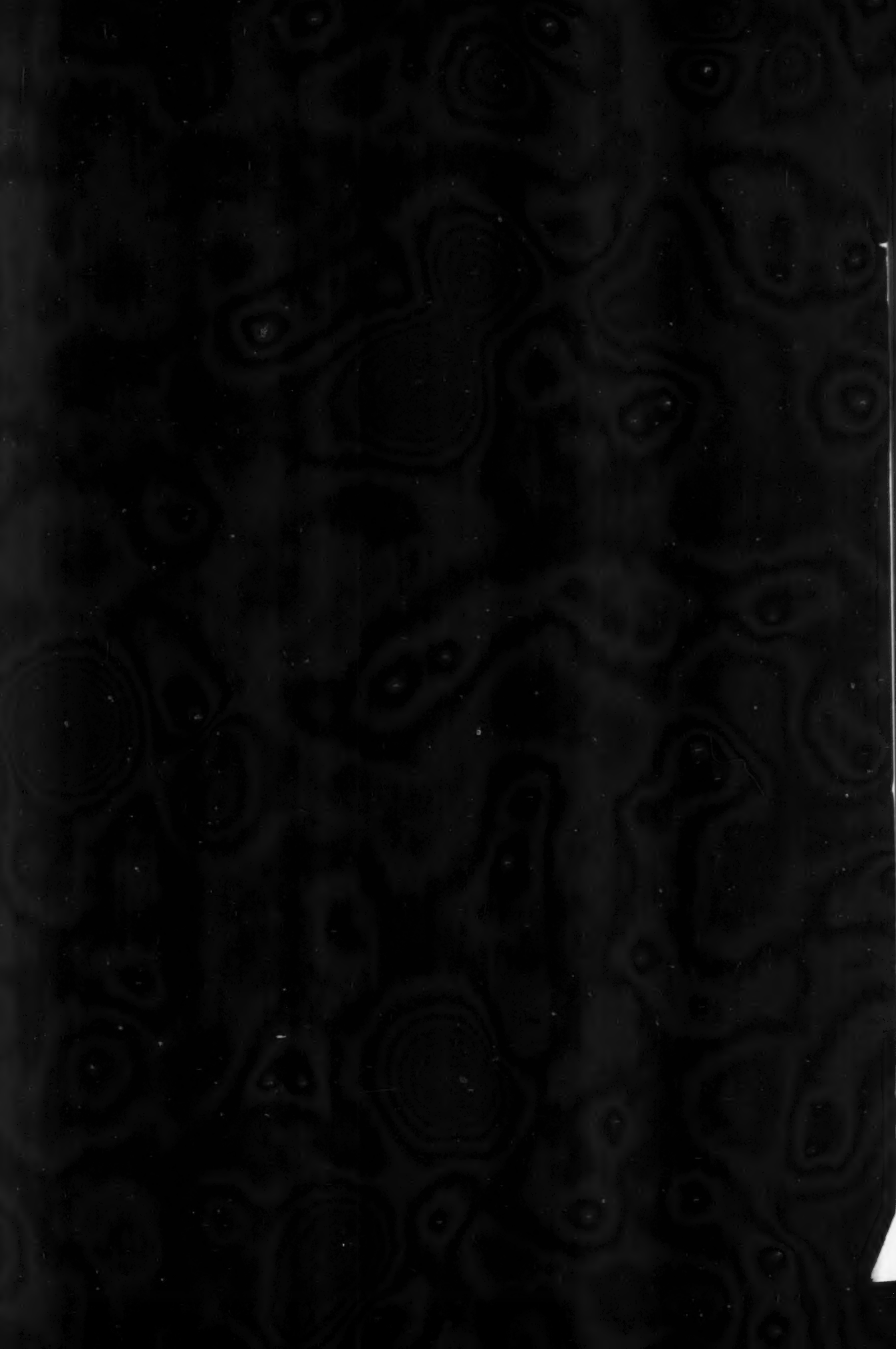
8. Jolliffe, N.: Liver function in congestive heart failure. J. Clin. Investigation 8:419-433, April 1930.

9. Mateer, J. G., *et al.*: Chronic subclinical impairment of the liver. J. Am. M. A. 133:909-916, March 1947.

10. Cantarow, A.: Studies of hepatic function in portal cirrhosis and congestive heart failure. Arch. Int. Med. 56:521-529, Sept. 1935.

11. Bockus, H. L., *et al.*: Gastro-enterology. W. B. Saunders Co., Philadelphia, 1944, p. 977.

12. Cantarow, A., and Trumper, M.: Clinical biochemistry. Ed. 3. W. B. Saunders Co., Philadelphia, 1945, p. 93.



MODERN TRENDS IN DIAGNOSIS AND TREATMENT OF ARTHRITIS OF UNKNOWN ETIOLOGY—STONEMAN

(Continued from page 416)

in occupation. Probably the best way to break the personality cycles is to place the patient temporarily in an entirely new environment.

Drugs, such as arsenic, iodine, salicylates, cinchophen, aminopyrine, quinine, digitalis, strychnine, nitrites, ortho-iodoxybenzoic acid, colloidal sulfur, sulfanilamide, colchicine, and acetyl-beta-methylcholine; radium, x-ray, mineral waters, vaccines, therapeutic jaundice, autohemotherapy, and gold salts are still being used empirically in arthritis. One cannot deny that many practitioners have good results using other methods than those which the writer prefers, but he feels that the merits of those methods are not pertinent for consideration in view of recent advances made in discovering the root causes of arthritis.

Osteopathic physicians are admirably fitted by training to carry on the work M.D.'s are attempting to do in the field of influencing the autonomics.

SUMMARY

1. A considerable confusion exists among authorities as to standard nomenclature for arthritis.
2. Probably Cohen has the best classification of arthritides of unknown etiology, namely, nonspecific arthritis and specific arthritis.
3. Psychic factors are the chief factors in the arthritides of unknown origin.
4. Osteopathic lesions are not only harbingers of disease, trauma, or psychic factors, but of arthritic lesions as well.
5. Arthritis is being treated successfully by therapies which affect chiefly the autonomics.
6. Psychotherapy should be used on patients with arthritis in combination with other treatment to secure the greatest possible improvement.
7. Change of personality and environment often is essential to satisfactory recovery from arthritis.

415 E. Ninth St.

REFERENCES

1. Fletcher, E., and Lewis-Faning, E.: The chronic rheumatic diseases, with special reference to chronic arthritis; a survey based on 1,000 cases. Post-Grad. M. J. 21-1-13, Jan. 1945.
2. Cohen, A.: Chronic arthritis. Clinics 4:209-226, June 1945.
3. Cecil, R. L.: Environmental factors in the etiology of rheumatic conditions. M. Clin. North America 29:566-570, May 1945.
4. Weiss, E., and English, O. S.: Psychosomatic medicine: the clinical application of psychology to general medical problems. W. B. Saunders Co., Philadelphia, 1943.
5. Dunbar, H. F.: Psychosomatic diagnosis. Paul B. Hoeber, Inc., New York, 1943.
6. Bauer, J.: Constitution and disease: applied constitutional pathology. Ed. 2. Grune & Stratton, New York, 1945.
7. Mackenzie, J.: Theory of disturbed reflexes in the production of symptoms of disease. Brit. M. J. 1:147, Jan. 29, 1921.
8. Pottenger, F. M.: Symptoms of visceral disease. Ed. 5. C. V. Mosby Co., St. Louis, 1938.
9. Dunbar, F.: Emotions and bodily changes. Ed. 3. Columbia University Press, New York, 1947.
10. Lichtwitz, L.: Pathology and therapy of rheumatic fever, edited by W. Chester. Grune & Stratton, New York, 1944.
11. Korr, I. M.: Neural basis of the osteopathic lesion. J. Am. Osteop. A. 47:191-198, Dec. 1947.
12. Beck, B. F.: Bee venom therapy: bee venom, its nature and its effects on arthritic and rheumatoid conditions. D. Appleton-Century Co., New York, 1935.
13. Trommer, P. R., and Cohen, A.: Use of neostigmine in treatment of muscle spasm in rheumatoid arthritis and associated conditions; preliminary report. J. Am. M. A. 124:1237-1239, April 29, 1944.
14. Pemberton, R.: Massage in internal medicine, in Handbook of physical therapy. Ed. 3. American Medical Association, Chicago, 1939, pp. 105-114.
15. Rowntree, L. G.; Adson, A. W., and Hench, P. S.: Preliminary results of resection of sympathetic ganglia and trunks in 17 cases of chronic "infectious" arthritis. Ann. Int. Med. 4:477-484, Nov. 1930.
16. Silberberg, M., and Silberberg, R.: Effects of endocrines on age changes in epiphyseal and articular cartilages. Endocrinology 31:410-418, Oct. 1942.
17. Stone, S.: Treatment of muscular dystrophies and allied conditions; preliminary report on use of vitamin E (wheat germ oil). J. Am. M. A. 114:2187-2191, June 1, 1940.
18. Bicknell, F., and Prescott, F.: Vitamins in medicine. Ed. 2. Grune & Stratton, New York, 1946.

Book Notices

EMOTIONAL MATURITY. By Leon J. Saul, M.A., M.D., Associate Professor of Psychiatry, Temple University School of Medicine, Special Lecturer in Psychiatric Information, Bryn Mawr College. Cloth. Pp. 338. Price $5.00. J. B. Lippincott Company, 227 S. Sixth St., Philadelphia, 1947.

The theme of this very timely book is expressed on page 316 as follows:

"The central feature of psychopathology and the key to the neuroses and psychoses is the tendency in everyone to *regress* under stress to earlier childhood ways of thinking and reacting, to those childhood patterns which, as we have seen, lie if only latent, at the unconscious core of every personality." This is an emphasis of a statement contained in the preface, "The fateful significance of psychiatry lies in the fact that in the last fifty years, it has learned to deal scientifically with the human spirit."

The author handles his subject by dividing the book into four parts. Part One is devoted to emotional development and preventive psychiatry. There are eight characteristics of maturity. These are: (1) Achievement of the capacity to live independently, (2) the capacity to enjoy a well-proportioned amount of play, dependence, receiving, and other respite from independence, responsibility, and giving, (3) relative freedom from the well-known constellation of inferiority feelings, egotism, and competitiveness, (4) conditioning and training necessary for socialization and domestication, (5) full sexual feelings, power, and ability to reproduce, (6) chanelling of aggressive tendencies into parental and creative values, (7) a firm sense of reality, and (8) flexibility and adaptability. Maturity means not only the capacity for these characteristics, but also the ability to enjoy them fully.

Part Two is concerned with emotional forces in the development of personality. "In the emotions, all is quantitative." This is evidenced by the adult needs for interest, attention, esteem, and approval (love), which are less than those of a child, and yet no adult is free from these needs. Man can stand only so much of reality at a time, then he must escape by regression. Sleep is such a mechanism. Anxiety is felt whenever one is threatened in any way, by external dangers or by one's own impulses. Hostility, which is easily aroused by such a process, is closely related to fear. This process of regression is a return to the role of a child, which is that of dependency, passivity, and receptivity.

The need for love is the most fundamental force in the human mind. It will appear as a dependency on others, as a demand for praise, recognition, understanding, or acceptance. It also finds expression in the hunger for superiority, fame, or money. It seeks satisfaction in sexual love and infatuation. If such cravings are unsatisfied in some people, disorders of the stomach may result, in others, asthma, and in still others, skin disorders. Throughout childhood it is of prime importance to be loved. Life depends on it.

Egoism, competitiveness, and feelings of inferiority are developmental emotional forces. "Nothing is so hard to look upon as another's good fortune."

Hostility, rebelliousness, and violence, so common in growing individuals, may come from a universal hurt of childhood, which is the very condition of being a child in a family and a world of grown-ups, being little, weak, and dependent for

one's well-being and very life upon the constant help and care of others.

The author emphasizes the place of dependency in the genesis of neuroses as follows: "So greatly does dependence hamper and do other emotions warp an individual's grasp of reality that hardly any two persons agree fully in their views. . . . We can say that people's emotions influence radically their grasp of reality, and the more dominated the person is by childhood emotions, the more distorted will be his view of reality."

Part Three considers the nature of neurosis, and does it very thoroughly. The subject is covered in terms of emotional vulnerability, hostility, and guilt, fight, and flight reactions, reactions to various types of stress, and weakened self-control. For example, the author says of guilt, "Strong guilt often colors a man's whole feeling about life and people. It often fills him with expectations of harm and calamity."

Part Four deals with dynamics of personality and is a consideration of the mechanisms and psychopathology of mind.

The book was written slowly over a number of years, and even includes some of the author's war experiences. He discusses the subject of mental dynamisms in easily understood everyday language. Dreams, for example, "are highly intimate personal and individual creations which express the essence of each person's emotional life. *Moreover they correlate directly with the person's life.* They reflect what a person is striving for or against and how he handles the powerful underlying forces which motivate him. . . . Dreams offer the clearest expression of the interplay of the forces in the emotional life. . . . No other method even begins to approach dream analysis for speed and accuracy of understanding the essence of man's motivations and emotional forces."

The author says of sex: "The childish, dependent trends can influence the strength and quality of the sexual current. When these trends are very strong, there is usually an overt or *latent* impairment of the heterosexual functioning. . . . Psychologically, sexuality has content, it has component impulses, and it serves as a means of expression, gratification, and drainage for these impulses."

Psychotherapy deals with emotions, and one of its guiding principles is to concentrate on those which are central. Rational treatment depends upon understanding the person, the stresses upon him, and how he is reacting to them. It is also a basic principle that the patient can only be won to new, more mature attitudes if these offer a decrease of suffering and an increase of enjoyment. "The over-all task is to help the man to understand his problem and to help himself."

This is truly an outstanding work and should be read by everyone dealing with nervous or emotional problems. It brings psychoanalysis within the range of the average physician and clarifies the processes of mind as taught by that school.

It can be recommended very highly.

THOMAS J. MEYERS, M.A., D.O., F.A.C.N.

NURSING. By Lulu K. Wolf, R.N., B.S., M.P.H., Professor of Nursing, Vanderbilt University School of Nursing. Cloth. Pp. 534, with illustrations. Price $3.50. D. Appleton-Century Company, 35 W. 32nd St., New York City, 1947.

This book is a comprehensive text encompassing not only the art, but also the philosophy and background of the nursing profession. It is an attempt to acquaint the nurse with the larger scope of influence and activity thrust upon the profession in modern times.

The author states in the preface, "The fundamental theme of this book is that every nurse—student and graduate—who assumes the care of a patient, has an obligation to him, his family, and the community in which he lives, to conserve his health and prevent further illness. Not only must the nurse care for the patient during his illness and help him get well, but she must care for him in such a way that he will stay well after he gets well."

The book is divided into three main parts. The first six chapters which constitute Part I are designed to orient the student of nursing to the profession. This part includes chapters entitled "Twentieth Century Trends in Nursing," "The Nation's Health Problems," "Preparation for Present Day Nursing," and "The Nurse in the Nation-Wide Health Program."

Part II is an effort to familiarize the nurse with the hospital, its management, influence on community life, health agency functions, and its significance to the patient.

A concise account of the actual art of nursing is given in the last thirteen chapters which make up Part III of the book. The functional tools of the profession and the principles and practice of nursing care are presented in a clear and well-organized manner.

The book is well indexed and illustrated. A list of references at the end of each chapter greatly enriches its value as a reference work as well as a text. The book should be of great value and interest to the student and graduate nurse alike.

ELEANOR BARTHA, R.N.

PROGRESS IN GYNECOLOGY. Edited by Joe V. Meigs, M.D., Clinical Professor of Gynecology, Harvard Medical School; Chief of the Vincent Memorial Hospital, the Gynecological Service of the Massachusetts General Hospital; Surgeon, Pondville Hospital; Gynecologist, Palmer Memorial Hospital; and Somers H. Sturgis, M.D., Chief, the Vincent Memorial Hospital Laboratory; Assistant Surgeon, Massachusetts General Hospital. Cloth. Pp. 552, with illustrations. Price $7.50. Grune & Stratton, Inc., 381 Fourth Ave., New York City, 1946.

In the preface of this book, the editors say, "There has been great progress in recent years in all the various branches of gynecology and especially in the endocrine researches as applied to functional abnormalities. This volume of papers on gynecologic subjects should fill the needs of many medical men, surgeons, gynecologists, and endocrinologists. It should also be of the greatest value to medical students, house officers, and residents." An effort has been made to gather together in this book many of the newer concepts in the gynecologic field and arrange them for easy accessibility.

The list of contributors to this work includes the names of many of the "bests" in the various fields of the medical profession. The papers have been divided and arranged in 10 general sections: Growth and Physiology, Diagnostic Methods, Functional Disorders, Interrelationship of Endocrine Glands, Sterility and Reproduction, Infections and Their Treatment, Benign Growths, Malignant Growths, Operative Technique, and Preoperative and Postoperative Care.

The editors explain, "It was impossible to avoid a certain amount of repetition, but it was the belief of the editors that it was much better to allow a certain amount of overlapping than to cut out the opinion of any expert on his own subject. It was our policy to select the 'hobby' of each author and ask him or her to write how each felt about a certain subject." The result is this book which contains much new material and many recently developed technics. It should be of great value not only to the gynecologist, but to the general practitioner as well.

AMERICAN PHARMACY. By Rufus A. Layman, Editor-in-Chief, M.D., Director, School of Pharmacy, University of Arizona. Volume 2. Cloth. Pp. 379, with illustrations. Price $7.00. J. B. Lippincott Company, 227 S. Sixth St., Philadelphia, 1947.

This book which is designed to follow Volume I presents in an organized manner the material needed for the advanced study of pharmacy.

The material used was written by specialists in each field covered and the manuscripts have been arranged and edited to achieve the maximum in clarity and continuity.

The book is divided into two parts. Part I, "Advanced Pharmacy," includes chapters on flavors, coloring agents, odors and deodorants, solvents, extraction of animal tissue and body fluids, parenteral preparations, and the manufacture of tablets. Part II, "Medical, Surgical and Dental Supplies and Animal Health Pharmacy," includes chapters on special diets, surgical appliances, surgical dressings, rubber goods, sutures, and sickroom supplies. The last two chapters of this part of the book are "Consumer Dental Products" and "Animal Health Pharmacy" which have been written as a preview of these important and rapidly developing fields.

Many graphs, charts, and well-chosen illustrations greatly enhance the value of this text as do the bibliography and index. The double column pages and clear print make perusal of this work a pleasure.

This book is written primarily for the advanced student of pharmacy and is not intended to be used for beginning study although many basic principles are included in the text.

CANCER: DIAGNOSIS, TREATMENT, AND PROGNOSIS. By Lauren V. Ackerman, M.D., Pathologist to the Ellis Fischel State Cancer Hospital; Assistant Professor of Pathology, Washington University School of Medicine, St. Louis; and Juan A. del Regato, M.D., Radiotherapist to the Radium Institute of the University of Paris. Cloth. Pp. 1115, with illustrations. Price, $20.00. The C. V. Mosby Company, 3525 Pine Blvd., St. Louis, 1947.

The first part of this book is devoted to subjects of general interest and application in the field of malignant neoplasms. It includes a chapter on cancer research contributed by Michael B. Shimkin of the staff of the National Cancer Institute.

The second part of the book is divided according to systems and subdivided as necessary according to anatomy, incidence, and etiology, pathology, clinical evolution, diagnosis, therapy, and prognosis. Numerous references are included and the text is well illustrated by drawings and by photographs in black and white and in colors. Both author and subject indexes are extensive and should make the work extremely valuable for everyday use and as a reference work.

The treatment of present choice is indicated for each type of cancer. The physics of radiation, its effect on normal and cancerous tissues, and the indications for radiotherapy are described clearly and constructively. Surgery for cancer in specific locations is given in the chapters in the second part of the book. The broad general aspects of cancer surgery are covered in a single chapter in the first part. It closes as follows: "Surgery is the only hope for cure in many malignant lesions, but the day is past when a surgeon can be considered competent simply because he is technically capable of carrying an operation to completion. The cancer surgeon must be pathologist, amateur physicist, physiologist, and statistician, as well as surgeon and philosopher."

This book gives a good, reliable, comprehensive account of the present knowledge of cancer as a practical problem. Its appearance will be welcomed by students and practicing physicians as a much needed new textbook on a subject which is increasingly important to the physician and his patients. No hospital or professional school library should be without it.

POISONS, THEIR ISOLATION AND IDENTIFICATION. By Frank Bamford, B. Sc., Late Director of the Medico-Legal Laboratory, Cairo. Revised by C. P. Stewart, M. Sc., Ph.D., Reader in Clinical Chemistry, University of Edinburgh. Senior Biochemist, Royal Infirmary, Edinburgh, Ed. 2. Cloth. Pp. 304, with illustrations. Price $5.00. The Blakiston Company, 1012 Walnut St., Philadelphia 5, 1947.

This is the revised edition of a book intended as a laboratory manual for chemists who have to deal with cases of poisoning. Emphasis throughout has been laid on practical details. The chapter on alkaloids contains much original work by Bamford. The book includes a section on the sulfonamides.

The late author's work in Egypt made it possible for him to write authoritatively on many subjects not covered in other texts on toxicology.

BRIEF PSYCHOTHERAPY. By Bertrand S. Frohman, M.D. Cloth. Pp. 265. Price $4.00. Lea & Febiger, Washington Square, Philadelphia, 1948.

This handbook on the clinical aspects of neuroses was planned and written to aid physicians in detecting and managing the underlying psychological factors which are masked by functional disturbances. The point of view throughout is psychosomatic.

In his Foreword Walter C. Alvarez says: "The text is well and interestingly written by a good teacher who knows how to arrange and headline his material. There is a minimum of Freudianism and bizarre interpretations of symptoms, and the reader will have more confidence in Dr. Frohman when he sees that he is not a rigid, fighting protagonist for some 'master' and his theory. Rather, he is a true scientist who has studied all the theories and has taken from each one whatever he has found good."

The book will make interesting and profitable reading for the general practitioner and for the layman with some background knowledge. The sections on the contributions of Freud, Jung, Adler, Stekel, and particularly Korzybski and his general semantics will be very helpful to those who have read something of these men and their work, but who have no clear-cut conceptions of them. A danger in this work lies in its seeming oversimplification. If read without some general knowledge of psychology and psychiatry, the book may produce false ideas concerning the method and purpose of psychotherapy.

NEW AND NONOFFICIAL REMEDIES 1947. Issued under the Direction and Supervision of the Council on Pharmacy and Chemistry of the American Medical Association. Cloth. Pp. 749, with illustrations. Price $3.00. J. B. Lippincott Company, 227 S. Sixth St., Philadelphia, 1947.

This book, edited and sponsored by the Council on Pharmacy and Chemistry of the American Medical Association, is a reliable guide to modern therapeutics. This volume continues the practice, originated some years ago, of listing preparations according to their therapeutic use. Thus there are chapters on Agents Used in Allergy, Analgesics, Anesthetics, Local Anti-Infectives, Cardiovascular Agents, Diuretics, Hematics, Hormones and Synthetic Substances, Serums and Vaccines, Vitamins and Vitamin Preparations, etc. The descriptions of some thirteen newly accepted preparations appear in this volume, excluding brands and dosages of products previously accepted.

There is a section on tests and standards, a bibliographic index, an index to distributors, and a general index. The bibliographic index is unusual and could be of great value if put to use. This book deserves a place on the library shelf of practically every physician. If used properly, it can soon repay the investment made in it.

DERMATOLOGIC CLUES TO INTERNAL DISEASE. By Howard T. Behrman, M.D. Assistant Clinical Professor of Dermatology, New York University College of Medicine; Adjunct Dermatologist, Mount Sinai Hospital and Beth Israel Hospital; Associate Dermatologist, Hillside Hospital; Diplomate of the American Board of Dermatology and Syphilology; Fellow of the American Academy of Dermatology and Syphilology. Cloth. Pp. 165, with illustrations. Price $5.00. Grune & Stratton, Inc., 381 Fourth Ave., New York, 1947.

In response to an apparent need for the correlation of the manifestations of skin disorders with those arising in some visceral dysfunctions, the author has written a book which presents concise descriptions of constitutional diseases exhibiting associated skin changes. Diseases of the skin of significance in the province of internal medicine have also been included.

The alphabetical arrangement of the book is unusual, but makes an index unnecessary. It also facilitates the finding of related facts quickly. The illustrations are well chosen. The book should be extremely useful to the general practitioner and the internist.

PHYSICAL MEDICINE IN GENERAL PRACTICE. Edited by Arthur L. Watkins, M.D. Cloth. Pp. 341, with illustrations. Price $5.00. J. B. Lippincott Company, 227 S. Sixth St., Philadelphia, 1947.

Today physical medicine is of interest to almost every practicing physician, but it is of paramount interest to the osteopathic physician. Therefore, this volume of the "American Practitioners Series" should be read by all members of the osteopathic profession.

Under the guidance of the editor, Arthur L. Watkins, a group of contributors who are outstanding in their fields has been assembled. The material covers the application of physical medicine in medicine, surgery, and the specialties in which it has proved of value. Rehabilitation and reconditioning have not been neglected.

While the approach of the osteopathic physician to this volume may differ from that of the M.D., he will undoubtedly find much that is of value to him.

THE BOOK OF THE STATES 1948-49. Volume VII. Cloth. Pp. 780, with illustrations. Price $7.50. With 1949 supplements, $10.00. The Council of State Governments, 1313 E. 60th St., Chicago, 1948.

This is the seventh edition of the standard reference book on government in the forty-eight States and the territories. Compiled and published by the Council of State Governments, it presents authoritative and comprehensive information on State governmental organization, activities, problems, and programs. Rosters of State officials and legislators are included.

The seventh edition reflects, as previous editions have done, the fact that many of the major tasks of government change with the times. It naturally emphasizes problems of postwar readjustment throughout the country.

Two supplements will be published in 1949, one in January and one in July. They will bring the rosters of officials and legislators up to date for that year.

A MANUAL OF OTOLOGY, RHINOLOGY AND LARYNGOLOGY. By Howard Charles Ballenger, M.D., F.A.C.S., Associate Professor and Acting Chairman of the Department of Otolaryngology, Northwestern University School of Medicine, Chicago, Illinois. Surgeon, Department of Otolaryngology, Evanston Hospital, Evanston, Illinois. Ed. 3. Cloth. Pp. 352, with illustrations. Price $4.50. Lea & Febiger, 600 South Washington Square, Philadelphia 6, 1947.

This little book, written by the co-author of one of the most widely used textbooks on otorhinolaryngology, presents clearly and concisely a great deal of essential material pertaining to the specialty. In preparing this edition, the text has been thoroughly revised and several important additions have been incorporated. Notable among them is the chapter on Headaches and Neuralgias of the Face and Head.

This book should be particularly valuable to the student who is burdened with a great deal of reading and to the general practitioner who needs an up-to-date, but not too detailed reference work.

DR. KIRKBRIDE AND HIS MENTAL HOSPITAL. By Earl D. Bond, M.D. Cloth. Pp. 163, with illustrations. Price $3.50. J. B. Lippincott Co., 227 S. Sixth St., Philadelphia, 1947.

The reading of the biography of a peaceful Quaker physician who lived from 1809 to 1883 provides respite from the desperation and distractions of the present. The life of Thomas Kirkbride shows the durable satisfaction of a driving force in full agreement with conscience.

This book gives a glimpse into the world of mental disorders, into an experimental utopia in a mental hospital, and into psychiatric principles which are as true today as they were a hundred years ago. Dr. Kirkbride took for granted that a patient was first a person to be respected and not an undifferentiated unit in the world of mental disorder. From this book the reader will see that today we know a great deal more but that much of that knowledge is based on fundamentals laid down by Dr. Kirkbride long ago.

AN INTRODUCTION TO PERSONAL HYGIENE. By Laurence B. Chenoweth, University of Cincinnati. Cloth. Pp. 345, with illustrations. Price $2.50. F. S. Crofts & Co., 101 Fifth Avenue, New York, 1947.

This textbook for college students has been written along new lines. It takes into consideration the fact that health education in secondary schools has advanced rapidly in the last decade and that, therefore, the college student of today has much more background than could have been assumed in the past.

The approach to the subject is historical, but the major portion of the book is devoted to up-to-date material. An appendix on chemical symbols and an excellent glossary aid in making the contents readily understandable. This book is suitable reading to be recommended by doctors to those patients who need further knowledge of general personal hygiene.

ROENTGEN INTERPRETATION. By George W. Holmes, M.D., Board of Consultation, Massachusetts General Hospital and Clinical Professor of Roentgenology, Emeritus, Harvard Medical School; and Laurence L. Robbins, M.D., Radiologist-In-Chief to the Massachusetts General Hospital and Associate in Radiology, Harvard Medical School. Ed. 7. Cloth. Pp. 398, with illustrations. Price $7.00. Lea & Febiger, 600 South Washington Square, Philadelphia 6, 1947.

Considerable new material has been added to the seventh edition of this well-known text in order to bring to the student and practitioner the newly developed methods of diagnosis and treatment in which x-ray plays a part.

Clearness and conciseness are the keynote throughout the book as each part of the entire body is discussed. The illustrations are well chosen and numerous and most of them are made from the original negatives rather than from a positive print.

This book is not an attempt to make a roentgenologist out of the practitioner, but rather a ready reference for students and practitioners who desire a knowledge of the fundamentals of roentgen diagnosis.

The index and table of contents are good and the bibliography following each chapter includes many references to current medical literature which should be helpful in further study.

CORNELL CONFERENCES ON THERAPY. Edited by Harry Gold, M.D., Managing Editor, and others. Volume II. Cloth. Pp. 354. Price $3.75. The Macmillan Co., 60 Fifth Avenue, New York City, 1947.

Volume I of the Cornell Conferences on Therapy was so successful that a second printing was necessary a few months after its publication. Volume II, which should be equally successful, comprises sixteen Conferences selected from the total of more than 100 which have been published in the past few years. The choices were made so as to insure emphasis on both new discoveries and basic principles and with due consideration of a wide range of readers.

Among the subjects covered are the treatment of poliomyelitis, meningitis, syphilis, coronary artery disease, and some of the tropical diseases; the use of oral penicillin; uses and abuses of quinidine; surgical treatment of hypertension; and the choice of sympathomimetic amines. Those who have participated in the Conferences are well known in their fields and their names lend authority to the material covered in this book.

PRINCIPLES OF OCCUPATIONAL THERAPY. Edited by Helen S. Willard, B.A., O.T.R., Director, Philadelphia School of Occupational Therapy; and Clare S. Spackman, B.S., M.S., in Ed., O.T.R., Director, Curative Workshop, Philadelphia School of Occupational Therapy and Director, Occupational Therapy Department, Hospital of the Graduate School of Medicine, University of Pennsylvania. Assistant Director, Philadelphia School of Occupational Therapy. Cloth. Pp. 416, with illustrations. Price $4.50. J. B. Lippincott Company, 227 S. Sixth St., Philadelphia, 1947.

Great strides were made in the development of occupational therapy during World War II. This book, which is edited by two authorities in the field, brings together the writings of a number of outstanding leaders concerning the principles of the profession.

The book is divided into two parts: "Basic Concepts" and "Applied Principles." The first part aims at providing a background knowledge and an understanding of the scope and possibilities of occupational therapy. The second part specifically describes therapies for various conditions, including mental diseases, tuberculosis, and physical injuries. It discusses services in different types of hospitals. The chapter on occupational therapy for patients with physical injuries by Spackman, one of the editors, contains much that should interest osteopathic physicians.

Conventions and Meetings

Announcements

American Osteopathic Association, Annual Meeting, Boston, July 19-23 inclusive. Program Chairman, George W. Northup, Morristown, N. J.

Academy of Applied Osteopathy, Boston, July 23, 24. Program Chairman, Robert S. Roscoe, Cleveland, Ohio.

Advisory Board for Osteopathic Specialists, Hotel Statler, Boston, July 18-21.

American Association of Osteopathic Colleges, Hotel Statler, Boston, July 16, 17, 20.

American Association of Osteopathic Examiners, Hotel Statler, Boston, July 20.

American College of Neuropsychiatrists, Hotel Statler, Boston, July 20, 21.

American College of Osteopathic Obstetricians, Hotel Statler, Boston, July 16-18. Program Chairman, Julian L. Mines, Philadelphia.

American College of Osteopathic Surgeons, Hotel Claridge, Atlantic City, N. J., October 10-14. Program Chairman, J. O. Watson, Columbus, Ohio.

American Osteopathic Board of Dermatology and Syphilology, Boston, July 18.

American Osteopathic Board of Internal Medicine, Boston, July 17-19.

American Osteopathic Board of Obstetrics and Gynecology, Boston, July 18, 19.

American Osteopathic Board of Pathology, Boston, July 18.

American Osteopathic Board of Pediatrics, Boston, July 16, 17.

American Osteopathic Board of Proctology, Boston, July 18, 19, 21.

American Osteopathic Board of Surgery, Boston, July 16-18.

American Osteopathic College of Proctology, Copley Plaza Hotel, Boston, July 21.

American Osteopathic College of Radiology, Hotel Claridge, Atlantic City, N. J., October 10, 11. Program Chairman, A. Carman Pettapiece, Portland, Me.

American Osteopathic Society for the Study and Control of Rheumatic Disease, Boston, July 18. Program Chairman, Elizabeth S. Carlin, Hempstead, L. I., N. Y.

Arizona, Phoenix, May 14-16.

Arkansas, Little Rock, May 21, 22. Program Chairman, H. V. Glenn, Stuttgart.

Association of Osteopathic Publications, Hotel Statler, Boston, July 17.

Auxiliary to the American Osteopathic Association, Copley Plaza Hotel, Boston, July 19-22.

Canada: See Regional Osteopathic Convention.

Child Health Conference and Clinic, Municipal Auditorium Arena and Little Theatre, Kansas City, Mo., May 10-12. Program Chairman, L. Raymond Hall, Kansas City, Mo.

Florida: See Georgia.

Georgia and Florida, Ansley Hotel, Atlanta, May 27-29. Program Chairman, Chan L. Plair, Albany, Ga.

Idaho: See Northwest Osteopathic Convention.

Illinois, Woodruff Hotel, Joliet, April 23-25. Program Chairman, R. A. Palmer, Ottawa.

Indiana, Van Orman Hotel, Fort Wayne, May 13-15. Program Chairman, C. W. Dygert, Fort Wayne.

Iowa, Hotel Fort Des Moines, Des Moines, May 17, 18. Program Chairman, H. L. Gulden, Ames.

Kansas, Allis Hotel, Wichita, May 1, 2. Midyear meeting, Board of Trustees and House of Delegates.

Kentucky, Louisville, October. Program Chairman, Harold D. Benteen, Ashland.

Maine, Belgrade Hotel, Belgrade Lakes, June 17-19. Program Chairman, Earl H. Gedney, Bangor.

Manitoba: See Regional Osteopathic Convention.

Michigan, Spring Refresher Course, Muskegon, April 30-May 1. Program Chairman, E. H. McKenna, Muskegon. Annual Convention, Pantlind Hotel, Grand Rapids, October 30-November 3. Program Chairman, W. Powell Cottrille, Jackson.

Minnesota, Lowry Hotel, St. Paul, May 14, 15. Program Chairman, E. S. Powell, St. Paul.

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*References on request

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Missouri, Jefferson Hotel, St. Louis, October 18-21. Program Chairman, J. R. Dougherty, Vandalia.

Montana, Missoula, July.

National Board of Examiners for Osteopathic Physicians and Surgeons, Hotel Statler, Boston, July 17, 20, 23.

National Osteopathic Interfraternity Council, Hotel Statler, Boston, July 19.

New Jersey, Newark, May 7-9. Program Chairman, R. W. Davis, Jr., Audubon.

New Mexico, Clovis, September.

New York, Hotel New Yorker, New York City, October 15, 16. Program Chairman, David J. Bachrach, New York City.

North Dakota, Bismarck, May. Program Chairman, J. O. Thoreson, Bismarck.

Northwest Osteopathic Convention, Davenport Hotel, Spokane, Wash., June 14-16. Program Chairman, E. D. Mosier, Puyallup, Wash.

Ohio, Columbus, May 9-11. Program Chairman, W. W. Custis, Dayton.

Oklahoma, Biltmore Hotel, Oklahoma City, October 12-14.

Ontario, Welland House, St. Catherines, May 6-8. Program Chairman, C. J. Heaslip, Hamilton.

Oregon: See Northwest Osteopathic Convention.

Osteopathic College of Ophthalmology and Otorhinolaryngology, Eastland Hotel, Portland, Me., July 15-17. Program Chairman, A. B. Crites, Kansas City, Mo.

Osteopathic Vocation Group of Rotary International, Hotel Statler, Boston, July 21.

Osteopathic War Veterans Association, Hotel Statler, Boston, July 22.

Osteopathic Women's National Association, Copley Plaza Hotel, Boston, July 18-20.

Pennsylvania, Penn Harris Hotel, Harrisburg, September 24-26. Program Chairman, Stuart F. Harkness, Harrisburg.

Raton Convention, Raton, N. M., May 27-29.

Regional Osteopathic Convention (Manitoba, Ontario, Saskatchewan, Alberta, British Columbia, Minnesota, North and South Dakota), Winnipeg, Manitoba, August 13, 14.

Society of Divisional Secretaries, Hotel Statler, Boston, July 16, 17, 19.

South Dakota, Mitchell, June 6-8. Program Chairman, M. W. Meyers, Hudson.

Southeastern Conference: See Georgia and Florida.

Tennessee, Nashville, October. Program Chairman, Perry Bynum, Memphis.

Texas, Rice Hotel, Houston, April 15-18. Program Chairman, William S. Gribble, Jr., Houston.

Vermont, September 29, 30. Program Chairman, Marvin May, Brandon.

Virginia, John Marshall Hotel, Richmond, April 9, 10. Program Chairman, A. G. Churchill, Arlington.

Washington: See Northwest Osteopathic Convention.

West Virginia, McClure Hotel, Wheeling, May 30, 31, June 1.

Western States Proctologic Society, Brown Palace, Denver, May 31, June 1. Program Chairman, Richard H. Hurst, Denver.

Wisconsin, Wisconsin Hotel, Milwaukee, May 5-7. Program Chairman, George C. Heilman, Wauwatosa.

Wyoming, Rock Springs, June.

OFFICIAL AND AFFILIATED ORGANIZATIONS

CALIFORNIA

Los Angeles City

Ralph P. Baker, Erie, Pa., was to speak on "General Surgical Conditions of the Right Lower Quadrant" at the meeting scheduled to be held February 9 at Los Angeles.

Southside

"Therapeutic Use of Gonadotropic Hormones," is scheduled to be presented by Leon J. DeMerre, Medical Director, E. S. Miller Laboratories, at the meeting to be held May 6 at Los Angeles.

COLORADO

State Society

The program announced in advance for the meeting scheduled to be held at Denver March 20 was to include the following: "The Differential Diagnosis Between Intra-Abdominal and Urological Lesions," C. Lloyd Peterson; "Various Forms of Conjunctivitis, Diagnosis and Treatment," C. C. Reid; "Council on Public Health Report," H. E. Lamb, all of Denver; and "The Osteopathic Approach to the Maintenance of Health," O. D. Fry, Colorado Springs.

Hospital Association

It was announced in advance that the program for the first formal meeting scheduled to be held at Longmont, January 24, was to include the following: "Preparation of Hospitals for Inspection by Hospital Examining Board of the American Osteopathic College of Surgeons, and the American Osteopathic Hospital Association, with their Requirements for Approval of Intern Training," Howard E. Lamb, Denver; "Economy of Hospital Management," Owen O. Taylor, Grand Junction; "The Physical Examination on the Hospital Case Record," Richard Omer, Johnstown.

ILLINOIS

District One (Chicago)

Margaret Barnes, Chicago, spoke on "Acute and Chronic Problems of Infants and Children" at the meeting held at Chicago March 4.

District Two

"The Teaching of Osteopathic Principles in a Modern Osteopathic College" was the subject of the speech given by Richard MacBain, Chicago, at the meeting held at Rockford February 12.

District Six

A meeting was scheduled to be held at Jacksonville March 18.

District Seven

The officers are: President, E. C. Andrews; vice president, John J. Eldridge; secretary-treasurer, Jacobine Kruze, all of Ottawa.

A meeting was scheduled to be held at Ottawa March 18.

INDIANA

State Society

The program announced in advance for the annual meeting to be held at Fort Wayne May 14 and 15 includes the following: "The Relation Between the Sympathetic Nervous System and Osteopathic Technic," Douglas Waitley, Evanston, Ill., and instruction and demonstrations of low-back technic by Herman L. Samblanet, Canton, Ohio.

KANSAS

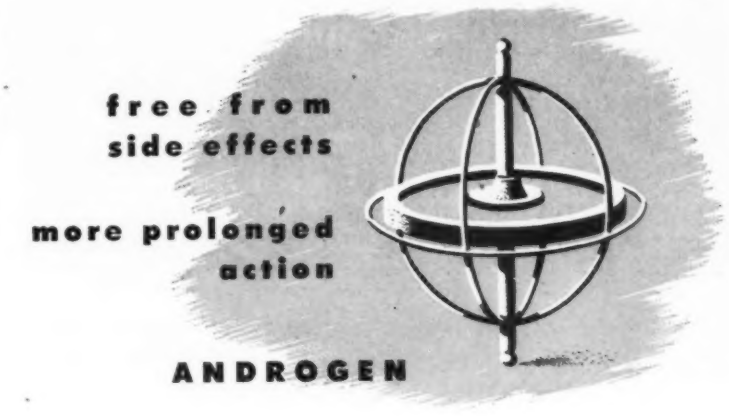
State Society

The mid-year conference is scheduled to be held at Wichita May 1, 2.

Topeka

The officers are: President, Joseph W. Stella; vice president, D. A. Bragg; secretary-treasurer, Mary Zercher (re-elected), all of Topeka.

The committee chairmen are: Membership, Dr. Zercher; ethics and industrial and institutional service, E. Claude Smith; hospitals and vocational guidance, Dr. Bragg; clinics, C. E. Brown; statistics and convention program, Genevra Leader; convention arrangements and public relations, Dr. Stella; legislation, Roy Brown; public health, W. S. Briscoe, all of Topeka.



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LOUISIANA

Southwest

A general discussion of recent developments regarding the osteopathic care of veterans and relation between members of the professional and insurance companies was held at the meeting at Lake Charles February 14.

The officers are: President, V. L. Wharton; vice president, Carl E. Warden, both of Lake Charles; secretary-treasurer, A. E. Stanton, Crowley. All were re-elected.

Dr. Warden was elected program chairman.

MAINE

Hospital Association

The officers are: President, Arthur H. Wittholn, Bangor; vice president, Harry Petri, Portland; secretary-treasurer, Miss Marguerite McQuade, Bangor. All were re-elected.

L. W. Morey, Millinocket, and Richard Wallace, Hollis Center, were re-elected as trustees.

MASSACHUSETTS

State Society

The officers were reported in the March JOURNAL.

The committee chairmen are: Ethics and censorship, Philip S. Taylor, Springfield; professional and public visual education, Wallace P. Muir, Boston; state membership, Mrs. Gladys M. Stockdale,

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1. New England J. Med. 213:279

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Newtonville; national membership, Frank Berg, Malden; general convention, Richard A. Montague, Concord; program, Samuel B. Jones, Worcester; exhibits, Robert R. Brown, Belmont; entertainment, Mildred Green; state legislation, Alden Abbott, both of Waltham; public clinics, Vincent Hammersten, Newton Highlands; radio, Nyles D. Crowner, Cambridge; vocational guidance, Arthur Martin, Malden; editorial contacts, Robert Brown, Belmont; public relations, Nelson D. King, Boston; federal-state coordinator, Raymond W. Boyd, Lynn; public and professional welfare, Charles Wood, Holyoke; veterans' affairs, J. Philip Gurka, Lawrence.

Connecticut Valley

A meeting was held February 17 at Northampton and acute torticollis and cervical technic were discussed.

Mystic Valley

Perrin T. Wilson, Cambridge, spoke on cranial bowl therapy at the meeting January 29 at Arlington.

At the meeting February 26 at Reading, William J. MacDonald, Boston, spoke on "Skin Diseases of the Arm and Hand."

The officers were reported in the February JOURNAL. R. Willard Hunt, Lexington, has been appointed program chairman.

Worcester County

Dr. Victor Hector, Worcester, who is a member of the Worcester Foundation of Experimental Biology, spoke on "Physiology of the Liver" at the meeting at Worcester February 4.

MICHIGAN

Hospital Association

The officers are: Vice President, Mr. Phillip Vickari, Grand Rapids; secretary-treasurer, Bertram E. Crase, Battle Creek.

Mrs. Janette Snyder, Lansing, and Campbell A. Ward, Mt. Clemens, are the trustees.

Kalamazoo

The officers were reported in the March JOURNAL.

Robert Pryor, George Voyzey, Wallace Gilkey, all of Kalamazoo, and Earl Weaver, Sturgis, are trustees.

The committee chairmen are: Membership, F. C. Ladd, Mendon; ethics, Dr. Voyzey; hospitals and clinics, and industrial and institutional service, Dr. Pryor; legislation and program, Milton J. Lucas; vocational guidance, Curtis Bartlett, both of Kalamazoo; public relations, Ernest L. Wheat, Allegan; veterans, W. M. Beemer, Three Rivers.

MISSOURI

Northeast

"A Lawyer Looks at a Doctor" was the subject of a speech by Judge Walter A. Higbee, Lancaster, at the meeting February 19 at Lancaster.

Southeast

A meeting was held at Cape Girardeau February 8.

NEBRASKA

State Society

Leonard C. Nagel, Kansas City, spoke on vascular diseases of the lower extremities, low-back pain and fractures and their treatment at the meeting at Hastings February 8.

NEW JERSEY

State Society

The program announced in advance for the meeting March 17 at Camden included the following: "Preoperative and Postoperative Routine for Genitourinary Cases," H. Willard Sterrett; "Recent Advances in Pediatric Practice," Leo C. Wagner; "Recent Advances in Osteopathic Medicine," Ralph L. Fischer; "The Use of Hormones in Gynecology" and "Surgical Treatment of Peptic Ulcer," Arthur M. Flack, Jr.; "Fifth Lumbar Problem in Respect to the Orthopedic Surgeon" and "Office Orthopedics," James M. Eaton; "Clinical Chemistry," Mr. Kenneth Senior, acting director, Department of Chemistry, P. C. O. All are of Philadelphia.

Bergen-Passaic

The officers are: President, William B. Wilson, Ridgewood; vice president, Stephen Szalay, Teaneck; secretary-treasurer, Stanley S. Kietur, Bergenfield.

NEW YORK

Rochester

James H. Reid and Merritt Vaughan, both of Rochester, were to present a symposium "Hyperthyroidism—How Do We Treat It?" at the meeting scheduled to be held at Rochester February 19.

OKLAHOMA

Kay County

LeRoy F. Gau, Enid, was to speak at the meeting scheduled to be held at Ponca City February 19.

Okmulgee County

The officers are: President, L. H. Tannehill, Henryetta; secretary, W. W. Burnett, Morris. Both were re-elected.

OREGON

Southern

Films were shown and a speech on obstetrics given by H. A. Krause, Medford, at the meeting at Medford February 4.

Wilamette Valley

D. E. Reid, Lebanon, discussed the Conference on Public Education on Health and W. P. Goulding, Corvallis, spoke on Osteopathic Progress Fund at the meeting February 12 at Albany.

A meeting was scheduled to be held at Albany in March.

PENNSYLVANIA

State Society

It has been announced that C. A. Tedrick, Denver, will present a course in diagnostic roentgenology at the Penn-Harris Hotel, Harrisburg, April 26-May 1. Roy E. Hughes, Indiana, is program chairman.

Lehigh Valley

A meeting was scheduled to be held at Bethlehem February 19.

RHODE ISLAND

State Society

It was announced in advance that the program for the third annual seminar to be held at Providence February 21, 22, was to include the following speakers: Robert B. Thomas, Huntington, W. Va., Earl H. Beasley, Malden, Mass., Lowell M. Hardy, Portland, Me.; Frederick S. Lenz, Cranston, and Arthur Martin, Malden, Mass.

TENNESSEE

West

The officers are: President, E. R. Cleaves, Memphis; president-elect, J. M. Moore, Jr., Trenton; vice president, H. F. Bower, Union City; secretary-treasurer, B. C. DeVilbiss, Trenton (re-elected).

TEXAS

Tarrant County

At the meeting at Fort Worth February 17, Frank Mitchell, Excelsior Springs, Mo., spoke on arthritis.

District One (Panhandle)

Edwin F. Peters, Ph.D., president of Des Moines Still College, spoke on osteopathic education and William Ballew, Amarillo, discussed osteopathic technics at the meeting at Amarillo February 8.

District Two

George Grainger discussed the Conference on Public Education on Health at the meeting at Tyler, February 8.

A meeting was scheduled to be held in Canton in May.

District Four

The officers are: President, W. D. Blackwood, Comanche; president-elect, Norman Leopold; vice-president, Edwin Gettins, both of Odessa; secretary-treasurer, Wiley B. Rountree, San Angelo (re-elected).

District Seven

A meeting was scheduled to be held in San Antonio February 9.

District Eight

C. R. Nelson, Austin, spoke on association affairs at the meeting held February 1 at Corpus Christi.

WASHINGTON

King County

Dr. Mary Alice Hoover, Tacoma, spoke on "Nuclear Energy in Medicine" at the meeting February 3 at Seattle.

WEST VIRGINIA

Parkersburg

W. W. Slater, Zanesville, Ohio, spoke on the osteopathic approach to low back problems at the meeting in Parkersburg February 12.

A joint meeting with the Southeastern Ohio district society and the staff of the Marietta Osteopathic Hospital was scheduled to be held in March.

WISCONSIN

Fox River Valley

J. D. Kehr, Fond Du Lac, was to speak on "Technic" at the meeting to be held at Fond Du Lac March 11.

Madison

A meeting was scheduled to be held at Madison March 18.

Milwaukee

An open discussion program on how to aid legal and legislative counsels in establishing facts on osteopathy was to be held March 4 at Milwaukee.

SPECIAL AND SPECIALTY GROUPS

AMERICAN OSTEOPATHIC SOCIETY OF PROCTOLOGY

The officers are: President, J. J. Cronin, Boston; vice president, Carl S. Stillman, Jr., San Diego, Calif.; secretary-treasurer, Arthur O. Dudley, Pasadena, Calif. (re-elected).

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Marille E. Sparks, Dallas, Tex., and Matt Henderson, Atlanta, Ga., have been elected trustees.

ILLINOIS OSTEOPATHIC SOCIETY OF RADIOLOGY

C. A. Tedrick, Denver, is to speak at the meeting to be held April 22 at Joliet.

IOWA STATE CRANIAL ASSOCIATION

Paul Kimberly, Des Moines, reviewed the anatomy of the parietal bones and Alice Paulson, Le Mars, spoke on vault technic at the meeting February 19.

The temporal and sphenoid bones were to be discussed by J. H. Fox, Cedar Rapids, Paul Kimberly, and Byron Laycock, both of Des Moines, at the meeting scheduled to be held at Waterloo March 19.

It has been announced in advance that the program for the meeting at Clear Lake June 17-19 is to include speeches on the cranial principle applied to spinal manipulation, comparative diagnosis, and case reports. Alice Paulson, Le Mars, will demonstrate associated technics.

PUGET SOUND ACADEMY OF APPLIED OSTEOPATHY

The program for the meeting at Seattle February 18 was to include the following: "Cranial Flexion and Extension," Margaret Gregory; "Shmorl's Findings in Intervertebral Disks," Mary Alice Hoover; Chemical Calcium and Phosphorous Balance in Blood," H. V. Hoover, all of Tacoma; "Report from Postgraduate Cranial Work," W. A. Newland, Seattle, and H. V. Hoover; "Nonsurgical Care of Herniated Disks," R. S. Koch, Olympia; "Nerve Exhaustion," K. D. Kohler, Everett.

State and National Boards

ARIZONA

Basic science examinations June 15. Address Francis A. Roy, secretary, Basic Science Board, University of Arizona, Tucson.

CALIFORNIA

Examinations June 3-5. Address Glen D. Cayler, D.O., secretary, Board of Osteopathic Examiners, 3440 W. 18th St., Los Angeles.

Troy L. McHenry, Los Angeles, has been appointed to the State Board of Osteopathic Examiners for a 2 year term.

COLORADO

Basic science examinations June 2, 3. Applications must be on file prior to May 19. Address Esther B. Starks, D.O., secretary, Basic Science Board, 1459 Ogden St., Denver 3.

Professional examinations in July. Address C. Robert Starks, D.O., president, State Board of Medical Examiners, 1459 Ogden St., Denver 3.

CONNECTICUT

Basic science examinations in June. Applications must be on file 2 weeks prior to the examination. Address Mr. M. G. Reynolds, executive assistant, State Board of Healing Arts, 250 Church St., New Haven 10.

Professional examinations July 6. Address Robert Nicholl, D.O., secretary, Board of Osteopathic Examination and Registration, 5 Field Pt. Rd., Greenwich.

DELAWARE

Examinations July 13, 14. Address Joseph S. McDaniel, M.D., secretary, State Board of Medical Examiners, 229 S. State St., Dover.

FLORIDA

Basic science examinations June 5. Applications must be on file prior to May 23. Address M. W. Emmel, D.V.M., secretary, State Board of Examiners in the Basic Sciences, University of Florida, Gainesville.

Professional examinations June 26, 27 at St. Petersburg. Applications must be filed 2 weeks prior to examination. Address Richard S. Berry, D.O., secretary, State Board of Osteopathic Medical Examiners. 617-18 Times Bldg., St. Petersburg 5.

The officers who were re-elected to the Board are: Chairman, Armin R. Frank, Marianna; vice chairman, H. B. Merner, Jacksonville; secretary-treasurer, Richard S. Berry, St. Petersburg.

Robert L. Johnston, Sebring, has been re-appointed to the Board for a 2 year term.

GEORGIA

Examinations July 6. Address Russell E. Andrews, D.O., secretary, State Board of Osteopathic Examiners, 304 First National Bank Bldg., Rome.

HAWAII

Examinations July 14. Address Mabel A. Runyan, D.O., secretary, Board of Osteopathic Examiners, 2333 C. Kalakaua Ave., Honolulu 30.

IDAHO

Examinations in June. Address Estella S. Mulliner, Director, Bureau of Occu-

pational License, Department of Law Enforcement, Boise.

ILLINOIS

Examinations June 22-24. Address the osteopathic examiner, Oliver C. Foreman, D.O., 58 E. Washington St., Chicago.

KANSAS

Examinations June 17-19 at Topeka. Applications must be on file 30 days prior to date of examination. Address Forrest H. Kendall, D.O., secretary, State Board of Osteopathic Examination and Registration, 420½ Penn, Holton.

J. E. Freeland, Coffeyville, is president of the Board.

KENTUCKY

Examinations June 16-18 at Henry Clay Hotel, Louisville. Address P. E. Blackerby, M.D., secretary, State Board of Health, 620 S. Third St., Louisville.

MAINE

Examinations June 8, 9 at Augusta. Address Albert E. Chittenden, D.O., secretary, Board of Osteopathic Examination and Registration, 50 Goff St., Auburn.

MARYLAND

Examinations in June. Address Walter H. Waugaman, D.O., secretary, State Board of Osteopathic Examiners, 33 S. Centre St., Cumberland.

MASSACHUSETTS

Examinations July 13. Applications must be on file 2 weeks prior to date of examination. Address H. Quimby Gallupe, M.D., secretary, Board of Registration in Medicine, State House, Boston 33.

MINNESOTA

E. C. Goblirsch, Little Falls, has been appointed to the State Board of Osteopathic Examiners for a 5 year term. He succeeds R. M. King, Minneapolis.

MISSISSIPPI

Examinations June 28, 29 at Jackson. Applications must be filed 10 days prior to examination. Address Felix J. Underwood, M.D., secretary, State Board of Health, Jackson.

MISSOURI

Examinations June 7-9 at Kirksville. Address F. C. Hopkins, D.O., secretary, State Board of Osteopathic Examination and Registration, 203 S. Sixth St., Hannibal.

NEBRASKA

Basic science examinations May 4, 5. Applications must be on file 15 days prior to examinations. Address Mr. Oscar F. Humble, Director, Bureau of Examining Boards, State House, Lincoln.

Ivan P. Lamb, Palisade, has been reappointed to the Osteopathic Board of Examiners for a 2 year term.

The officers of the Board are: President, Dr. Lamb; vice president, E. Bernard Drost, North Platte; secretary, J. Raymond Swanson, Jr., Wahoo.

NEVADA

Examinations in July. Address Walter J. Walker, D.O., secretary, Board of Osteopathic Examiners, 15 Saviers Bldg., Reno.

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Summarizing their study of various agents for the treatment of dermatophytosis, Hopkins and co-workers* state in their conclusions—"The incidence of irritation was lowest with undecylenic, propionic and benzoic acids." Further, "The high percentage of effectiveness and low incidence of irritation indicated that undecylenic acid was one of the best of the fungicides tested for routine treatment of subacute cases."

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The officers of the board are: President, Walter L. White, Reno; vice president, Earl H. Reed, Las Vegas; secretary-treasurer, Walter J. Walker, Reno.

NEW JERSEY

Examinations June 15. Address E. S. Hallinger, M.D., secretary, Board of Medical Examiners, 28 W. State St., Trenton.

NEW MEXICO

Basic Science examinations May 2. Address Miss Marguerite Kilkenny, Assistant Secretary of State, c/o Secretary of State's Office, Santa Fe.

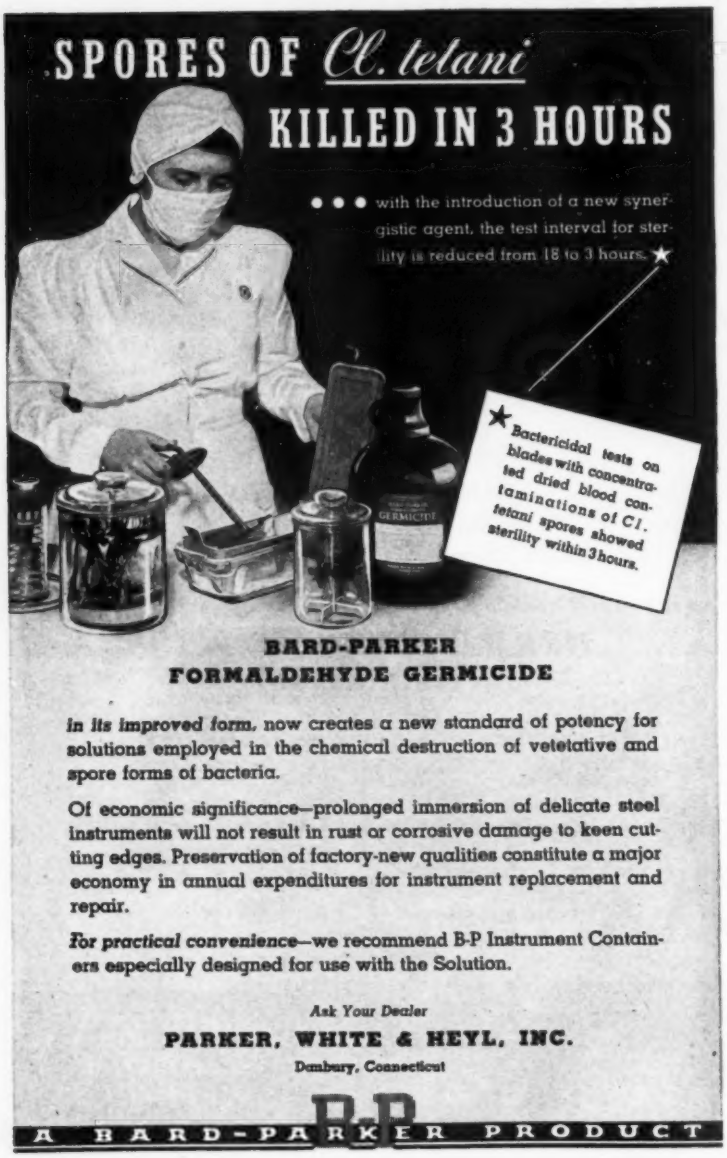
Professional examinations May 27-29 at Raton. Address H. E. Donovan, D.O., secretary, Donovan Osteopathic Clinic and Hospital, Raton.

NEW YORK

Examinations June 28-July 1 at New York and Albany. The first part of examinations (anatomy, physiology, chemistry and bacteriology) may be taken by students at the end of the sophomore year. Address Mr. Horace L. Field, Chief, Bureau of Qualifying Certificates and Professional Examinations, Albany.

NORTH CAROLINA

Examinations in July. Address Frank R. Heine, D.O., secretary, State Board of Osteopathic Examination and Registration, 910 Southeastern Bldg., Greensboro.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NORTH DAKOTA

Examinations in July. Address M. M. Kemble, D.O., secretary, State Board of Osteopathic Examiners, 6-10 Kresge Block, Minot.

OHIO

Examinations June 21-24 at Columbus. Address H. M. Platter, M.D., secretary, State Medical Board, 21 W. Broad St., Columbus 15.

OKLAHOMA

Examinations June 1 at Oklahoma City. Address Kendall Rogers, D.O., secretary, Board of Osteopathy, 804 First National Bldg., Oklahoma City.

OREGON

Examinations in July. Applications for reciprocity will be considered May 7, 8. Applications must be on file prior to April 23. Address Lorienne M. Conlee, Executive Secretary, Board of Medical Examiners, 608 Failing Bldg., Portland.

RHODE ISLAND

Basic science examinations May 12. Applications must be on file prior to May 1. Professional examinations in July. Address Mr. Thomas B. Casey, Administrator of Professional Regulations, State Office Bldg., Providence.

SOUTH CAROLINA

Examinations June 15, 16. Address M. V. Huggins, D.O., secretary, State Board of Osteopathic Examiners, 208 Carolina Life Bldg., Columbia 56.

SOUTH DAKOTA

Basic science examinations June 4, 5 at Vermillion. Address G. M. Evans, Ph.D., secretary, Board of Examiners in Basic Sciences, Yankton College, Yankton.

TENNESSEE

Examinations July 5, 6 at Memphis. Address M. E. Coy, D.O., secretary, State Board of Examination and Registration for Osteopathic Physicians, 1226 Highland Ave., Jackson.

TEXAS

Examinations in June. Address H. F. Connally, M.D., secretary, State Board of Medical Examiners, Amicable Bldg., Waco.

VIRGINIA

Examinations June 18-19. Address K. D. Graves, M.D., secretary, Board of Medical Examiners, Roanoke.

WASHINGTON

Basic science examinations in July. Address George C. Starlund, acting director, State Department of Licenses, Olympia.

WISCONSIN

Basic science examinations June 5 at Plankinton House, Milwaukee. Applications must be filed prior to May 29. Address Professor W. H. Barber, secretary, State Board of Examiners in the Basic Sciences, Ripon College, Ripon.

Professional examinations June 22 at Milwaukee. Address C. A. Dawson, M.D., secretary, State Board of Medical Examiners, River Falls.

WYOMING

Examinations in June. Address G. M. Anderson, M.D., secretary, State Capitol, Cheyenne.

ONTARIO

Examinations in June. Address George A. DeJardine, D.O., secretary, Board of Regents, Drugless Practitioners Act, 57 Bloor St., W., Toronto.

RE-REGISTRATION OF OSTEOPATHIC LICENSES

April 15—Montana, $2.00 for residents; $1.00 for nonresidents. Address Asa Willard, D.O., secretary, Board of Osteopathic Examiners, Wilma Bldg., Missoula.

May 1—Iowa, $1.00. Address Mr. Dwight S. James, assistant secretary, Board of Osteopathic Examiners, 914 Walnut Bldg., Des Moines 8.

May 1—Washington, $2.00 Address Mr. George C. Starlund, acting director State Department of Licenses, Olympia.

EXAMINATIONS BY NATIONAL BOARD

The National Board of Examiners for Osteopathic Physicians and Surgeons conducts Parts I and II of its examination on the first Thursday and Friday of each May and December at the six approved colleges. Application blanks may be obtained from the secretary, and the completed application blank, together with a passport photograph and check for the part or parts to be taken, must be in the Secretary's office by the November 15, or April 15, preceding examination. Part III of the examination will be given in specified locations at the discretion of the Board and for the convenience of the applicant.

Examinations in Part I consist of anatomy, physiology, pathology, chemistry, and bacteriology. Part II consists of examination in mental diseases, surgery, obstetrics, and gynecology, pediatrics, public health, osteopathic theory and practice. Part III is an oral examination.

Address John E. Rogers, D.O., Secretary, 16 Mount Vernon Street, Oshkosh, Wisconsin.

EASE AND LUXURY FACTORS IN DIABETES

Diabetes is more common in this country today than ever before. Despite a better understanding of the disease and improved methods of treatment, diabetes continues to increase.

Authorities estimate that there are about 725,000 diabetic persons in the United States at the present time. Mortality from the disease has risen progressively throughout most of the Nation since about 1900. In that year, diabetes ranked twenty-seventh as a cause of death; by 1945, it had moved up to eighth place.

In Illinois the record with regard to diabetes has been little different from that for the Nation as a whole. The trend of mortality in this State has been steadily upward for almost three decades, having risen from a rate of 16.8 per 100,000 of the population in 1918 to a rate of 31.1 in 1946. During the first ten months of last year deaths from diabetes were at a rate of 33.4 per 100,000 of the State's inhabitants.

BETTER CASE FINDING

How much of this apparent increase in diabetes is due to better case-finding and reporting, and how much is due to factors which favor the development of the disease is problematical. But regardless of the cause, this upward trend in diabetes is particularly significant in view of the fact that insulin for controlling the disease once it has developed was discovered as early as 1922.

It should be remembered that insulin will not *prevent* diabetes. Medical authorities seem to believe, however, that much of the diabetes in this country could be avoided if people would pay close attention to the predisposing causes: obesity, overeating, lack of exercise and heredity.

Generally speaking, diabetes is a disease of older people. The condition manifests itself most commonly among persons between the ages of 40 and 60, especially those who are overweight. Women are much more frequently affected than men, indicating the importance of the dietary-exercise theory as a factor in the cause of diabetes. Although women are reputed to eat less than men, they tend toward foods rich in carbohydrates and probably take less exercise than men. Studies reveal that diabetes is seldom found in persons engaged in occupations requiring hard manual labor. As observed by one well-known health authority, "ease, luxury and indulgence" appear to be dominant factors in bringing on the disease.

HEREDITY IMPORTANT

Racial and familial heredity are also predisposing causes of diabetes. It has been noted that Jews experience a higher diabetes rate than most other racial groups. By studying diabetic patients and their relatives physicians have also learned that the disease runs in families. For this reason, members of families in which there is diabetes on both the mother's side and the father's side should be especially careful to avoid overeating resulting in obesity.

Physicians say that diabetes develops

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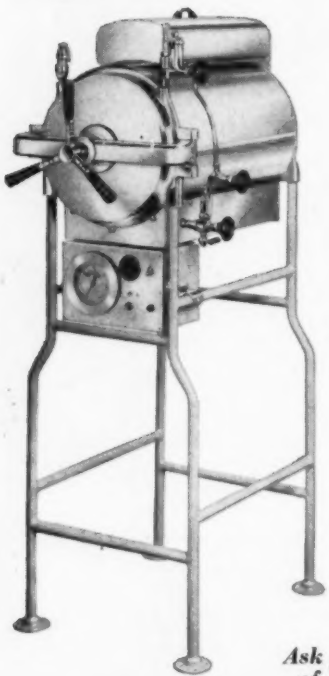

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as a result of improper functioning of the pancreas, an organ which controls the assimilation of sugar in the body. The function of the pancreas is to secrete insulin which is necessary to convert blood sugar (glucose) into glycogen for storage in the liver and for subsequent use by the cells of the body. When the pancreas, for some reason still unknown, fails to secrete sufficient insulin, the blood becomes overloaded with sugar which cannot be stored in the liver without conversion into glycogen.

This is why insulin prepared from the pancreas of certain animals is given to many diabetic patients. Insulin does not *cure* diabetes. It simply provides the patient with a substance essential to life which his own body is not manufacturing in sufficient amounts.

EARLY DISEASE CONTROLLED THROUGH DIET

In certain mild cases that are discovered early diabetes may be controlled by giving careful attention to the diet. For other patients the use of insulin may be required in addition to a regulated diet and adequate exercise.

That these measures are effective in controlling diabetes is evidenced by the fact that diabetic patients are living much longer today than in earlier years. Of the 2,541 deaths from diabetes recorded by the State Department of Public Health in 1946, more than one-half were among persons 65 years of age or older.

While many lives have been prolonged by modern methods of treatment, it appears that any substantial progress in reducing the death rate from diabetes will depend largely on self-discipline with respect to diet and exercise in *preventing* the disease.—*Illinois Health Messenger,* March 1, 1948.

NEGRO HEALTH WEEK EVERY WEEK

Public health authorities have long known that certain racial groups, like certain families, tend to have their own particular susceptibilities to disease. Just as Jewish people seem to be more likely to develop diabetes, and the American Indians, tuberculosis, so do Negroes have their own special health problems.

Among the diseases that are known to be more prevalent among the colored population than the white people are tuberculosis, syphilis, pneumonia, nephritis and diseases of the heart. Cancer seems to be one of the major afflictions from which the Negro is more likely to escape.

NEGRO DEATH RATE HIGHER

Statistics show that the death rate from tuberculosis for colored people in this country is about three times that for the white race. With syphilis, the difference is even more pronounced. About five deaths from syphilis occur among Negroes for every one death among white people.

According to biologists, races of people may develop a certain degree of immunity to diseases to which they have had a long period of exposure. Since Negroes have been exposed to both tuberculosis and syphilis for only a relatively short period of time (about 500 years) this factor may be partly responsible for the high mortality rates from these infections.

Negroes are also known to suffer a greater percentage of loss of maternal and infant life. Death among Negro mothers from causes associated with child-bearing is about twice as frequent as among white people. Likewise, the death rate among Negro babies under one year of age is almost twice as great.

While the progress made by medical science in combatting diseases of childhood and improving techniques for the early detection of tuberculosis and syphilis have benefited both the colored and white man, records reveal that Negro health is still lagging behind.

LIFE EXPECTANCY LOWER

In the overall health picture of Negroes it should be noted that the average life expectancy for a colored person in this country is about nine or ten years less than that for the average white person. For Negroes this life expectancy is about 54 years, as compared with an average of 65 years for white people.

That this condition is due in part to unfavorable cultural and economic factors and their relationships to health can hardly be questioned. In many places the Negro citizen with his low income and sub-standard living conditions does not have an equal opportunity with white

man for combatting the ravages of disease. Due to an impoverished socio-economic background many Negroes are lacking in adequate health information regarding the preventive and curative aspects of disease.

As is well known, the germ that produces disease is no respecter of persons or races. Obviously, when any segment of the population suffers excessively from disease, the entire population is affected.

NATIONAL HEALTH WEEK

To meet the particular problems of the Negro race is the aim of the National Negro Health movement which was started by Booker T. Washington in this country in 1915. After his death the program was carried on at Tuskegee Institute and Howard University until 1932, when it was made a part of the year-round activities of the United States Public Health Service.

The need for a health plan for the individual Negro and his family will be emphasized during this year's National Negro Health Week which is being observed April 4 to 11. To further promote the health of the Negro people greater efforts should be made not only during Negro Health Week but also during every week of the year.—*Illinois Health Messenger*, March 1, 1948.

STREPTOMYCIN EFFECTIVE IN PLAGUE

Although few cases of human plague have occurred in the United States, the announcement that medical science has scored again against this dread disease will undoubtedly be of interest to health workers and other persons throughout this country.

According to a recent issue of a British medical journal, *The Lancet*, five patients in India who were dying from plague are "alive and well today," presumably a result of treatment with streptomycin. These patients were victims of a plague outbreak which involved 152 cases with 66 deaths, or a case fatality of 43.4 per cent. Suffering from very high temperatures, the patients were in a state of semi-consciousness, accompanied by a dangerously low rate of breathing. Improvement was noted within 36 hours after the initial streptomycin treatment. The vicitims regained consciousness and recovery followed rapidly. In reporting the experiment the medical health officers of India concluded that "streptomycin *appears* to be a potent drug for the treatment of human plague."

A centuries-old scourge, plague has taken the lives of millions of people in China, India and other Asiatic countries. During the 30-year period 1898 to 1928, 11,409,485 deaths from plague were reported in India alone. The disease was first introduced in the United States about the opening of the twentieth century, presumably conveyed from China to San Francisco. Plague has also appeared in the Gulf states, Louisiana, Texas and Florida, but was quickly eradicated.

Judging from the speed with which previous outbreaks have been suppressed, it seems unlikely that human plague could ever gain a foothold in the United States. Authorities cite the fact, however, that plague is firmly established among ground squirrels and other wild rodents in the western states. An eastward spread of these infected animals toward urban areas heavily infested with domestic rats might present a difficult problem to this section of the country.—*Illinois Health Messenger*, March 1, 1948.

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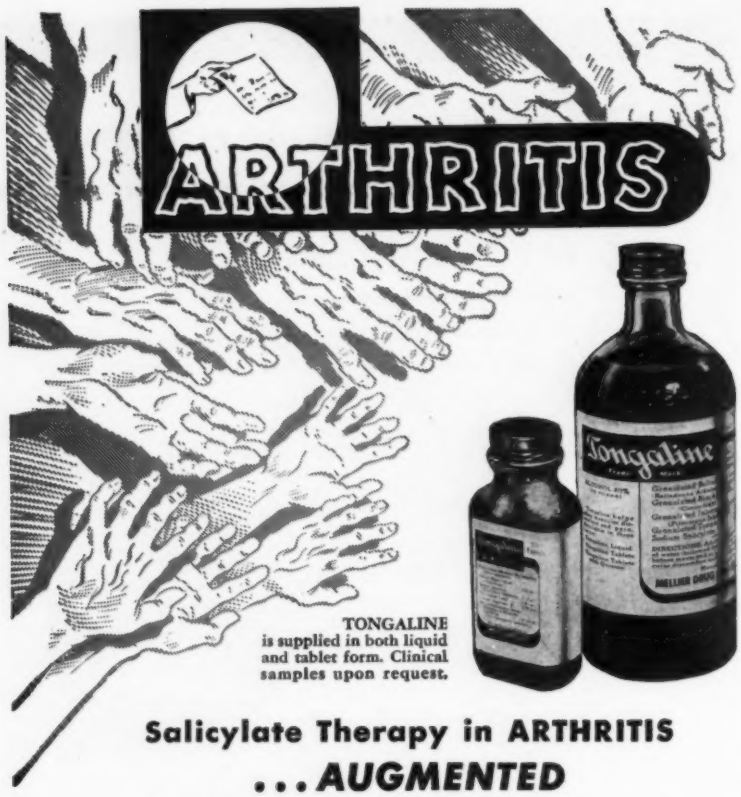
PASSANO FOUNDATION AWARD

For the first time since the Passano Foundation was established in 1944, a dual selection has been made. The award goes to the famous Taussig-Blalock team who developed the successful operative procedure which is popularly known as the "blue baby operation." It also marks the first time that a woman has been named as an award winner.

The Williams & Wilkins Company, Medical Publishers of Baltimore, established the Passano Foundation to aid in any way possible the advancement of medical research, especially research which bears promise of clinical application. Previous winners have been Dr.



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E. J. Cohn, of Harvard, for his work on fractionation of blood; Dr. Ernest Goodpasture, of Vanderbilt, for virus culture by the chick embryo method; Dr. Selman Waksman, of Rutgers, for discovery of streptomycin.

Presentation of the $5,000 cash award will be made at the Palmer House, in Chicago on the night of June 23 during the convention week of the American Medical Association. Dr. Morris Fishbein, editor of the *Journal of the American Medical Association* will be one of the speakers. Present also will be Dr. Edward L. Bortz, president, and Dr. Roscoe L. Sensenich, president-elect; members of the Board of Trustees and other officials of the Association.

Dr. Helen B. Taussig is Associate Professor of Pediatrics and Dr. Alfred Blalock is Professor of Surgery at the Johns Hopkins Medical School. Since the first "blue baby" operation was undertaken in November 1944 more than 600 patients drawn from all parts of the world have been operated on at Johns Hopkins Hospital alone.

The condition requiring correction by operation is a congenital anatomical fault first described by the French physician, Fallot, in 1888 and termed by medical science the tetralogy of Fallot. Because of an insufficient supply of oxygen in the blood the victims present the typical "blue" appearance.

Cases suitable for operation are selected as a result of painstaking diagnostic tests and the actual operation may require as long as 3 hours. Results are often dramatic. Immediately following operation normal color usually returns; in some instances oxygen saturation of the blood has risen from 30 percent to 69 percent as soon as the operation has ended.

While convalescence must be carefully regulated the end result usually finds the patient transformed from an invalid in a wheel chair to an individual who can pursue a life of reasonable activity.

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REPORT OF THE ATOMIC ENERGY COMMISSION

On January 31, 1948, the Atomic Energy Commission, established by the Atomic Energy Act approved August 1, 1946, made its third semiannual report to Congress.

The Atomic Energy Act of 1946 provides for a number of major programs, including a program of assisting and fostering private research and development to encourage maximum scientific progress. The Commission consists of six divisions, including a Division of Biology and Medicine.

The Division of Biology and Medicine advises and assists the General Manager and the Managers of Operations in all matters relating to biology and medicine, with particular attention to the fields of radiology, toxicology, health-physics, biochemistry, and public health.

Regarding research assistance the Commission's regulations dated January 29, 1948 states:

"(a) The Commission has entered into many contracts with public and private institutions for the prosecution of research and development work in various branches of atomic science and technology. These contracts are negotiated and supervised on behalf of the Commission by the General Manager, the Managers of Operations, and their authorized representatives. Inquiries regarding arrangements for research and development work may be addressed to the

General Manager or the Managers of Operations.

"(b) The Commission further assists and fosters research and development by a program for the sale and distribution of various radioactive and stable isotopes, including deuterium, and for the irradiation in an operating nuclear reactor of various samples. Because radioisotopes are at present only in limited amounts, and because they may present a distinct health hazard unless used with proper care, the Commission desires to insure that they are distributed in a manner that will assure effective use and safe handling. Any scientist working in a recognized academic, medical, or industrial research institution in the United States may address his specific request for isotopes or irradiation service to the United States Atomic Energy Commission, Office of Oak Ridge Directed Operations, P. O. Box E, Oak Ridge, Tennessee. The Office of Oak Ridge Directed Operations processes applications for necessary approvals. The approved application is returned to the applicant for transmittal to the contractor serving as distributor. The contractor, on receipt of the approved application, fills the order and bills the applicant according to a price schedule approved by the Commission."

Production of Isotopes.—According to the Commission's report, artificial radioactive isotopes were first manufactured in cyclotrons, in minute quantities and at very great expense. Now, as a result of the development of atomic energy, there are more than a hundred kinds available for research work, and in adequate quantities—more than adequate, in fact, in view of the number of technicians qualified to use them. Radioisotopes for off-project distribution are produced in the reactor at Clinton National Laboratory, Oak Ridge.

The stable isotopes are separated from their brother atoms in the great magnetic machines built during the war at Oak Ridge to extract the fissionable U-235 isotope from common uranium. The radioactive isotopes are manufactured by irradiation of materials in nuclear reactors constructed for the production of fissionable plutonium or for research. Thus, isotypes are by-products of the manufacture of the atomic bomb.

But although by-products, isotopes are generally regarded as the most valuable new research tool since the invention of the microscope. If the development of atomic energy had produced nothing else, its cost would undoubtedly have been balanced within a few years by the gains in knowledge that the nation is making with isotopes—gains that are already becoming tangible in medicine, chemistry, industry, and agriculture.

The Commission considers it to be of vital importance to make isotopes available to all qualified users in quantities as large as can be profitably used, in variety as great as can be developed, and at the lowest possible cost.

Nearly 2000 shipments of radioactive isotopes have been made from the Commission's Isotopes Division at Oak Ridge since August, 1946, more than 1600 of them within the past year. Close to 100 different kinds are available. Production

in PREOPERATIVE MANAGEMENT of Umbilical Hernia

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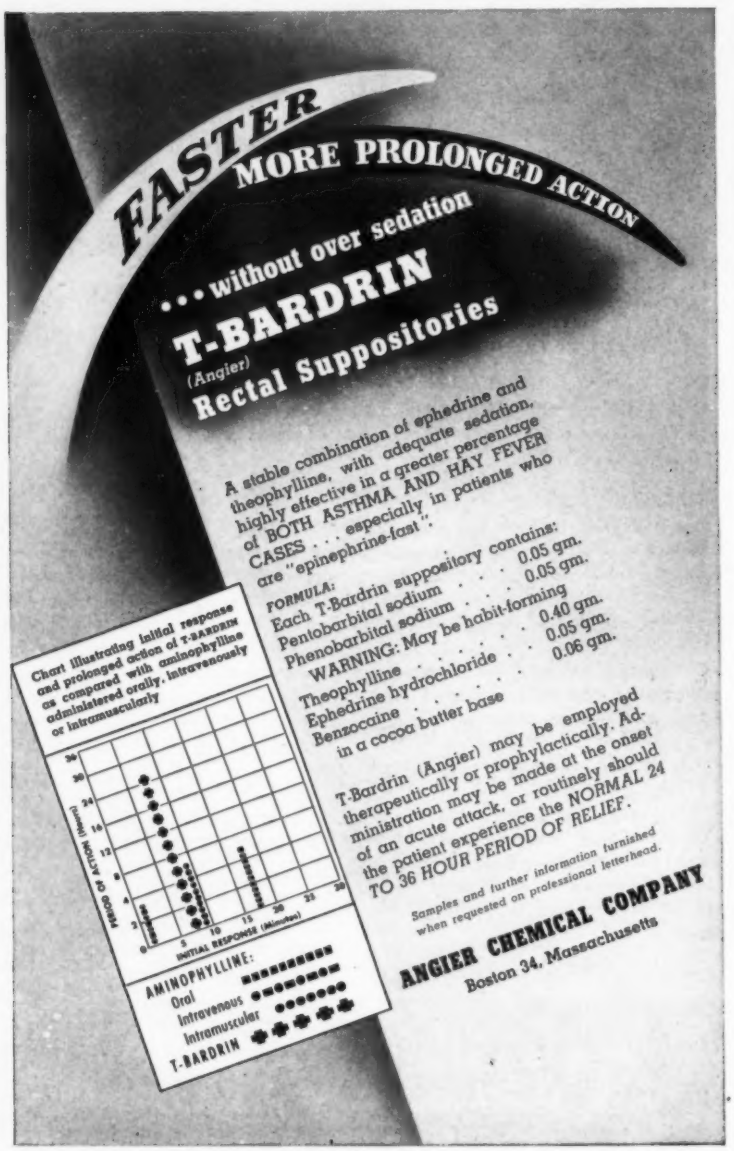
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Chart illustrating initial response and prolonged action of T-BARDRIN as compared with aminophylline administered orally, intravenously or intramuscularly
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INITIAL RESPONSE (Minutes)
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Oral
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and distribution methods have been brought to the point where it is certain that all reasonable future demands can be met. Costs are being reduced rapidly, and for most types, are now well within the range that the average laboratory can afford to pay.

The Commission provides advice on the utilization of radioactive isotopes, together with film badges and other safety equipment, and hopes soon to expand this service to the point where all inexperienced prospective users are instructed in the most productive and safest research techniques.

Intensive development work in the Oak Ridge electromagnetic separation plant made possible the recent announcement of the availability of more than 100 types of stable (non-radioactive) isotopes for distribution in the United States, and some 200 shipments were made in 1947.

Liaison is maintained with the National Bureau of Standards on radioactivity standards and safety, the U. S. Department of Agriculture and state agricultural experiment stations on agricultural utilization, the National Research Council on cancer research, and the medical agencies of the Armed forces.

A new committee on Isotope Distribution was named to advise the Commission's Isotopes Division on the most productive and safest distribution, particularly where therapeutic treatment was planned. Members of this Advisory Committee are:

Dr. G. Failla, of the Columbia University Medical School; Chairman

Dr. H. A. Barker, plant nutrition, University of California, Berkeley, Calif.

Dr. Henry Borsook, Department of Biochemistry, California Institute of Technology, Pasadena, Calif.

Dr. Robley D. Evans, Massachusetts Institute of Technology

Dr. Hymer L. Friedell, Lakeside Hospital, Western Reserve University, Cleveland, Ohio

Dr. J. G. Hamilton, University of California

Dr. Joseph W. Kennedy, Washington University (St. Louis)

Dr. Robert F. Mehl, Carnegie Institute of Technology

Dr. Paul C. Aebersold, Chief, Isotopes Division, AEC, Oak Ridge, Tenn.

Dr. Austin M. Brues, Argonne National Laboratory, Chicago Directed Operations, AEC

Dr. A. H. Holland, Jr., Medical Adviser, Oak Ridge (Tenn.) Directed Operations

Dr. L. N. Nims, Acting Head of Department of Biology, Brookhaven National Laboratory, AEC, Patchogue, Long Island, N. Y.

Biology and Medicine.—The report shows that during its first year of operation, the Commission—while encouraging and assisting wherever possible the research work already in progress and undertaking such work in its own laboratories—laid the groundwork for a nationwide program of biological and medical research and education. The major steps taken were:

1. Appointment of a Medical Board of Review, composed of seven experienced scientists in the field of biological and medical research.

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In June, 1947, the Commission requested the President of the National Academy of Science to nominate a panel of qualified advisers to review the medical and biological aspects of the program. This Medical Board of Review recommended the continuance and expansion of research and training in the various fields, appointment of a permanent advisory group, and establishment of a broad training program.

2. Appointment of a permanent Advisory Committee for Biology and Medicine.

This Committee, appointed in September, 1947,. is composed of seven distinguished scientists in the various medical and biological fields and convenes at monthly intervals at the various installations in an unusually active advisory capacity. The Committee is composed of the following members:

Dr. Alan Gregg, Director for Medical Sciences, Rockefeller Foundation, New York City; Chairman

Dr. G. W. Beadle, Division of Biology, California Institute of Technology, Pasadena, Calif.

Dr. Detlev W. Bronk, Director of the Johnson Research Foundation, University of Pennsylvania.

Dr. Ernest W. Goodpasture, Dean of the School of Medicine and Professor of Pathology, Vanderbilt University.

Dr. Baird Hastings, Professor of Biochemistry, Harvard Medical School.

Dr. E. C. Stakman, Chief, Division of Plant Pathology and Botany, University of Minnesota.

Dr. Joseph T. Wearn, Dean of the School of Medicine, Western Reserve University.

3. Establishment within the Commission's Washington headquarters of a Division of Biology and Medicine.

The Division will correlate the medical and biological research programs related to atomic energy in the Commission's, in other Government, and in private laboratories; initiate needed investigations and review all contracts entered into and allocations of funds for research; and direct for the Commission its health physics work and industrial hygiene activities.

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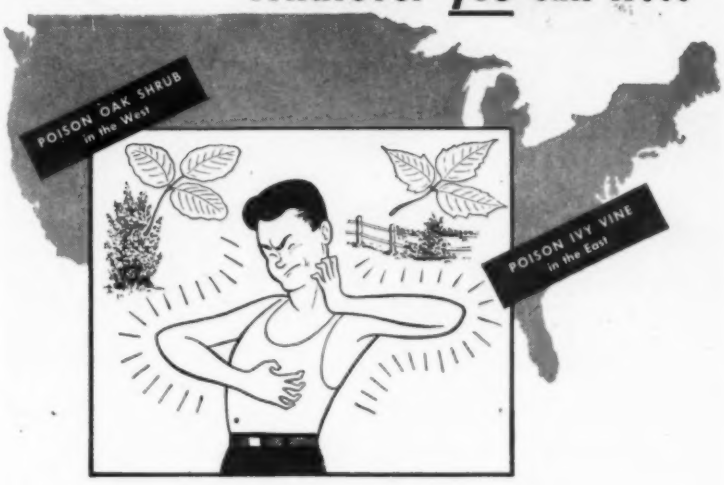

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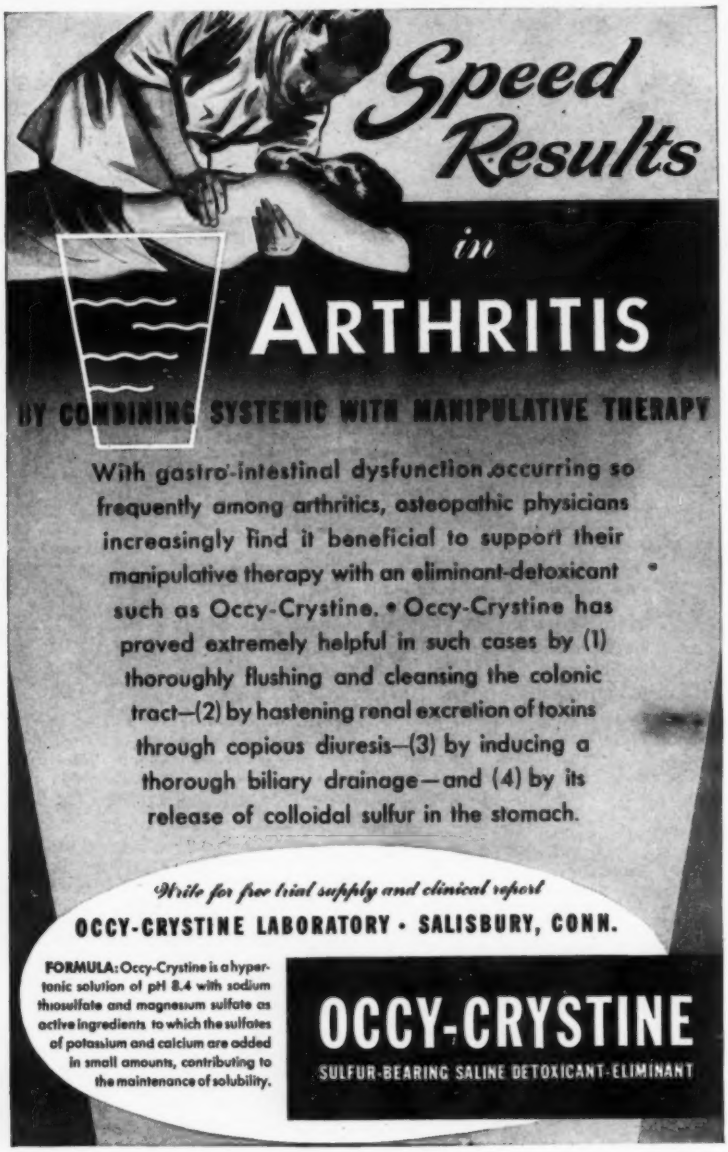
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4. Arrangement with the National Research Council for joint sponsorship of the Council's Committee on Atomic Casualties, which will make a long-range study of the effects of atomic bombing on Japanese survivors in Hiroshima and Nagasaki.

The study of the actual effects—immediate and long-term—of exposure of human beings to an atomic bomb is one of our most important sources of information for the future. Besides the effects on general physiological functions, the relations of genetics and cancer are primary concerns. The President directed the National Research Council to undertake this study and authorized the cooperation of Government agencies.

5. Maximum development of the production and distribution of isotopes for medical and biological investigations and the appointment of a Committee on Isotopes Distribution composed of experts in the field.

Radioactive isotopes continued to hold the center stage in medical and biological research. With these tools, for example, new methods of treating heart dropsy were developed and encouraging results were obtained in various disorders of the blood.

6. Support of research through the administrative organization of the Office of Naval Research.

7. Planning of a Fellowship Program for the training of personnel for atomic energy work in medical and biological fields.

8. Formulation of a Cancer Program, in accordance with the policy of assisting established medical research to explore the application of atomic energy to the various aspects of cancer treatment.

The Commission's cancer program developed in 1947 includes special assistance for cancer research at such institutions as the New York Memorial Hospital, Harvard University, and the University of California; the development in the Commission's laboratories of radioactive materials for cancer treatment, and the provision of beds for selected cancer patients in hospitals at the Clinton, Brookhaven, and Los Alamos Laboratories, and elsewhere.

9. Authorization of funds for building and equipping a medical and biological training and research center at the University of Rochester, Rochester, New York.

These new facilities will permit the extension of the medical and biological research program conducted for the Government at this institution and particularly of the work now being done under contract with the Commission, centering around the medical and biochemical aspects of radioactive substances and processes.

The Medical and Biological Research Program.—The Commission through 1947 had research contracts with the University of California, Columbia University, Harvard University, the Massachusetts Institute of Technology, and the University of Rochester, providing for research not only on the biological effects of radiations and radioactive materials but also in the utilization of isotopes for the investigation of life processes in plants and animals. A great many other institutions in all parts of the country conducted similar work.

At various of the Commission's own installations, intensive work was carried

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out in these fields—at the Clinton National Laboratory, studies on the effects of atomic energy on hereditary traits and other biological phenomena, and at the Argonne National Laboratory, extensive toxicologic studies on the various products of fission of the nucleus. This latter study revealed new methods of producing tumors experimentally and thereby provided new avenues in cancer research. At Los Alamos, New Mexico, several drugs and vitamins were made radioactive and studies in the human body, and methods of treatment of radiation sickness were evaluated. The Brookhaven National Laboratory started to investigate the relation of atomic energy to cancer and to carry out basic research.

The initial task of the Commission in 1947, and specifically of its Division of Biology and Medicine and the Advisory Committee, was to inventory the research and educational work now going on in this field, select the areas where the effort should be stimulated, and take positive action—by assistance through contracts, participation in the work of other institutions, the construction of facilities, and the establishment of laboratories—to enlarge and coordinate the national program. This work continues.

Industrial Health.—Unprecedented safety measures have been developed to meet the equally unprecedented hazards to health involved in the atomic energy production process—from the novel respirators used for uranium work to the remote control "fingers" used by the Los Alamos operator who views his work through television.

Many of the materials that must be handled are organically poisonous, aside from any danger of radiation. Protective measures must be based upon an understanding of why the materials are toxic and a determination of tolerance standards. These investigations were carried out during 1947 at a score of universities and medical institutions and government and industrial laboratories, and have resulted in more effective utilization of protective clothing, respirators, dust removing systems, cleaning methods, and analytical techniques for the continuous testing for danger.

Investigations of the effects of radiations on living things are still so new and tentative that they have the character of a search after fundamental knowledge. But the application of health physics cannot wait the results of this search; therefore, the safety measures adopted against radiation are now largely of the kind that can be instituted without the guidance of well-established standards. The policy has been to take no chances. A small fraction of what is calculated to be the minimum safe tolerance dose has been the limit for workers. Shielding—of reactors, particle accelerators, and radioactive materials—has been designed with ample safety factors.

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The Commission's Offices of Directed Operations maintain Medical Divisions to coordinate safety operations in contractor's plants. A remarkable safety record has been achieved in 1947 throughout the Commission's organization.

Training and Information.—The report points out that an inseparable part of the Commission's responsibility for the development of atomic energy relates to the training of men who will do the work. During 1947, a Fellowship Program was developed in the Division of Biology and Medicine, designed to train qualified persons for careers in the medical and biological aspects of atomic energy. The Commission will finance the program and establish the operating policies and training goals to be met. Actual administration, including selection of candidates, will be undertaken by the National Research Council of the National Academy of Sciences, which has had broad experience in the administration of fellowship programs. The AEC has budgeted approximately $1,000,000 for the first year.

FELLOWSHIPS

The initial fellowships will be distributed among three board classes of candidates:

Doctors of Medicine

Doctors of Philosophy in the biological sciences

Bachelors of Science and of Arts, who will receive training in health physics and related subjects

Postdoctoral fellowships will extend for a period of two years, with annual stipends, depending upon marital status, commensurate with other fellowship programs. Graduate training in health physics will extend for a period of one year or longer depending upon the qualifications of the candidate and his need or desire for additional training.

It is anticipated that fellows trained under the program will become leaders in future development of medical and biological education in the atomic energy field. An opportunity to utilize their training at AEC research and production centers will be offered, although the fellows will not be committed to such work. Insofar as possible, they will be afforded an opportunity to elect the type of train-

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ing desired and the means by which it will be obtained, and will have a certain amount of latitude in selecting the universities or laboratories at which their studies will be pursued.

Selection of institutions will depend in part upon geographical location and in part upon availability of adequate educational and physical facilities. Special consideration will be given institutions in which it is possible to integrate medical and biological training with physics, chemistry, and mathematics. Since conditions allowing this combination are limited, special facilities are being provided at the Commission's regional laboratories and at certain universities. However, fellowship training will not be limited to these institutions. Fellows may receive all or part of their training at other laboratories, universities, hospitals, or foundations having necessary facilities.

Results of work carried out by a fellow will be available to the public through approved scientific channels, without restriction, except as may be required for reasons of security.

A similar plan for research fellowships in the physical sciences is under development.

Public and Technical Information.—Directly supporting not only the research and training activities of the Commission's facilities, but also the work of educational and industrial institutions throughout the country, is the provision of technical information on work done in the atomic energy program.

The Commission established late in 1947 a unified Public and Technical Information Service to insure, in accordance with the Atomic Energy Act, adequate control and dissemination of the information that is the life blood of scientific and engineering progress—and of public understanding of that progress and its implications. The Public and Technical Information Service combines five interdependent functions relating to the control and dissemination of information:

1. Preparation, reproduction, and controlled distribution within the project of classified reports to personnel requiring such information.

2. Declassification through analysis by qualified scientific reviewers of material which then becomes available for public use.

3. Editing, preparation, and reproduction of technical information materials, including indices, abstracts, project reports, and declassified papers.

4. Security guidance service—aid to publishers, editors, reporters, broadcasters, leaders of citizen groups, or others issuing material relating to atomic energy—in order to prevent compromise of restricted data; and assistance to contractors of the Commission and other agencies of government to safeguard restricted data.

5. Public information service—assisting representatives of the press, radio, picture services, citizen and trade organizations, and educational agencies, in obtaining the full range of declassified and unclassified data currently available from the national atomic energy program.

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THE CANNED FOOD REFERENCE MANUAL. A publication of the American Can Company Research Division. R. W. Pilcher, Editor in Chief. Ed. 3. Sent free of charge upon request. American Can Company, 230 Park Ave., New York 17, 1947.

HEART. A Physiologic and Clinical Study of Cardio-Vascular Diseases. By Aldo A. Luisada, M.D., Instructor in Physiology and Pharmacology, Tufts College Medical School Lecturer in Medicine; Lecturer, Postgraduate Division, Tufts College Medical School Associate in Medicine, Beth Israel Hospital, Boston, Mass., Former Professor of Medicine, Ferrara, Italy. Cloth. Pp. 653, with illustrations. Price $10.00. Williams & Wilkins Co., Mt. Royal and Guilford Aves., Baltimore, 1948.

INTRODUCTION TO HUMAN PHYSIOLOGY. By William D. Zoethout, Ph.D., Professor Emeritus of Physiology in the Chicago College of Dental Surgery (Loyola University). Cloth. Pp. 424, with illustrations. Price $4.00. C. V. Mosby Company, 3207 Washington Blvd., St. Louis 3, 1948.

RHEUMATISM AND SOFT TISSUE INJURIES. By James Cyriax, M.D., B.Ch. (Cantab.), Physician-in-Charge of the Physiotherapy Department, St. Thomas's Hospital, London. Cloth. Pp. 410, with illustrations. Price $9.50. Paul B. Hoeber, Inc., 49 E. 33rd St., New York City, 1946.

THE BOOK OF THE STATES, 1948-49. Volume VII. Cloth. Pp. 780, with illustrations. Price $7.50. The Council of State Governments, 1313 E. 60th St., Chicago, 1948.

TREATMENT IN GENERAL PRACTICE. By Harry Beckman, M.D., Professor of Pharmacology, Marquette University School of Medicine, Milwaukee, Wisconsin. Ed. 6. Cloth. Pp. 1129. Price $11.50. W. B. Saunders Company, West Washington Square, Philadelphia, 1948.

MODERN TREATMENT OF PEPTIC ULCER. By Asher Winkelstein, M.D., B.S., Association Physician for Gastro-Enterology and Physician in Charge of the Gastro-Intestinal Clinic, the Mount Sinai Hospital, New York City; Assistant Professor of Clinical Medicine (Gastro-Enterology), Columbia University, New York City. Cloth. Pp. 205, with illustrations. Price $4.00. Oxford University Press, 114 Fifth Ave., New York 11, 1948.

SYMPOSIUM OF MEDICOLEGAL PROBLEMS. Edited by Samuel A. Levinson, M.D., Ph.D., University of Illinois College of Medicine for the Committees of the Institute of Medicine and The Chicago Bar Association. Cloth. Pp. 255. Price $5.00. J. B. Lippincott Company, 227 S. Sixth St., Philadelphia, 1948.

DISABILITY EVALUATION. By Earl D. McBride, B.S., M.D., F.A.C.S., Diplomate American Board Orthopedic Surgery; Assistant Professor in Orthopedic Surgery, University of Oklahoma School of Medicine; Attending Orthopedic Surgeon to St. Anthony's Hospital; Associate Orthopedic Surgeon to Wesley Hospital; Visiting Surgeon to W. J. Bryan School for Crippled Children; Chief of Staff to Bone and Joint Hospital, Oklahoma City, Okla. Ed. 4. Cloth. Pp. 667, with illustrations. Price $12.00. J. B. Lippincott Company, 227 S. Sixth St., Philadelphia, 1948.

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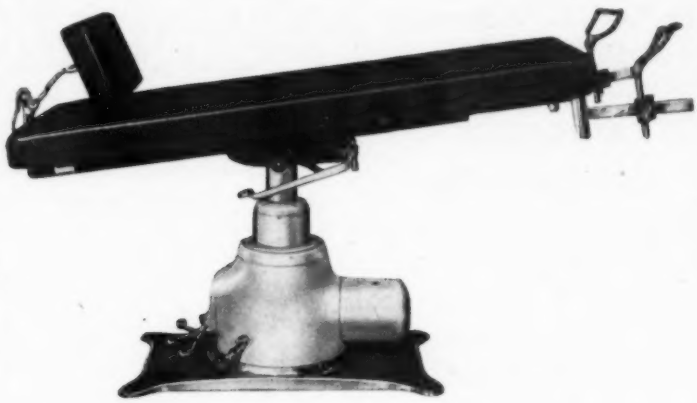

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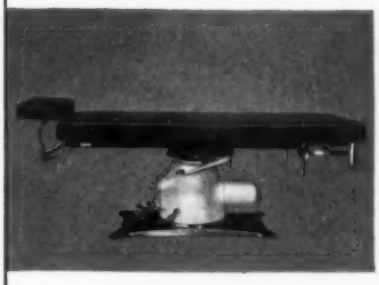

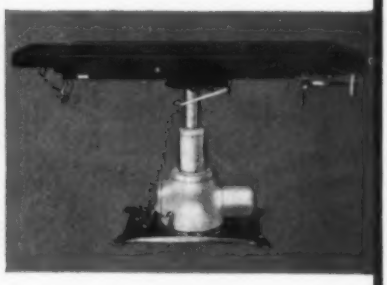

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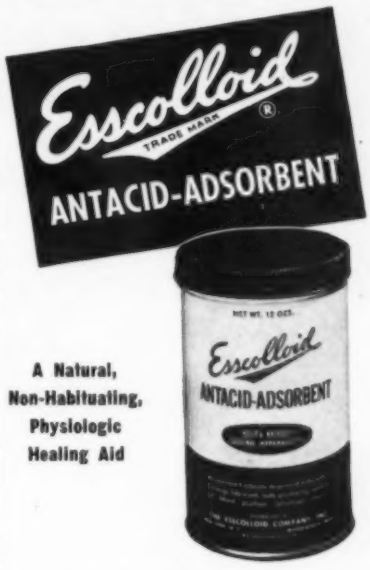

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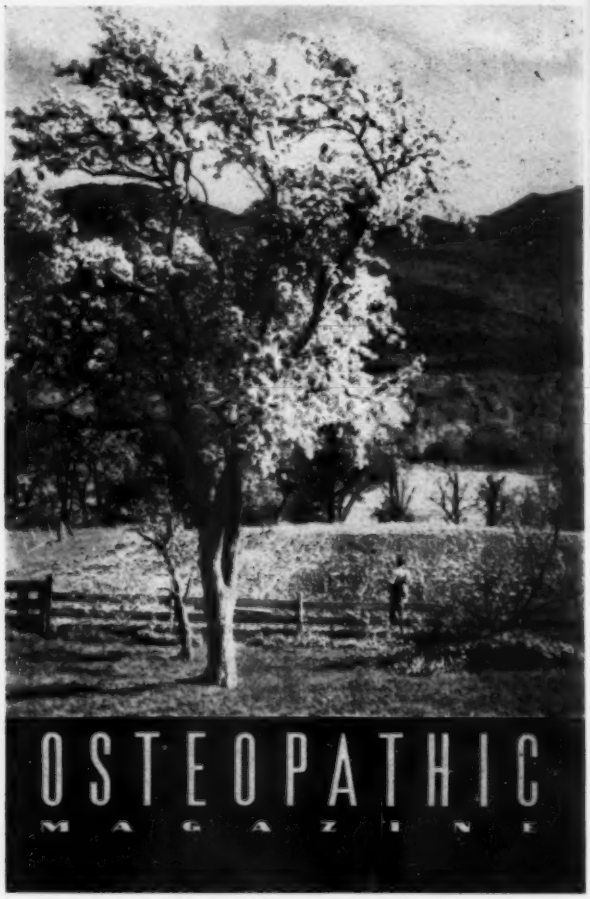

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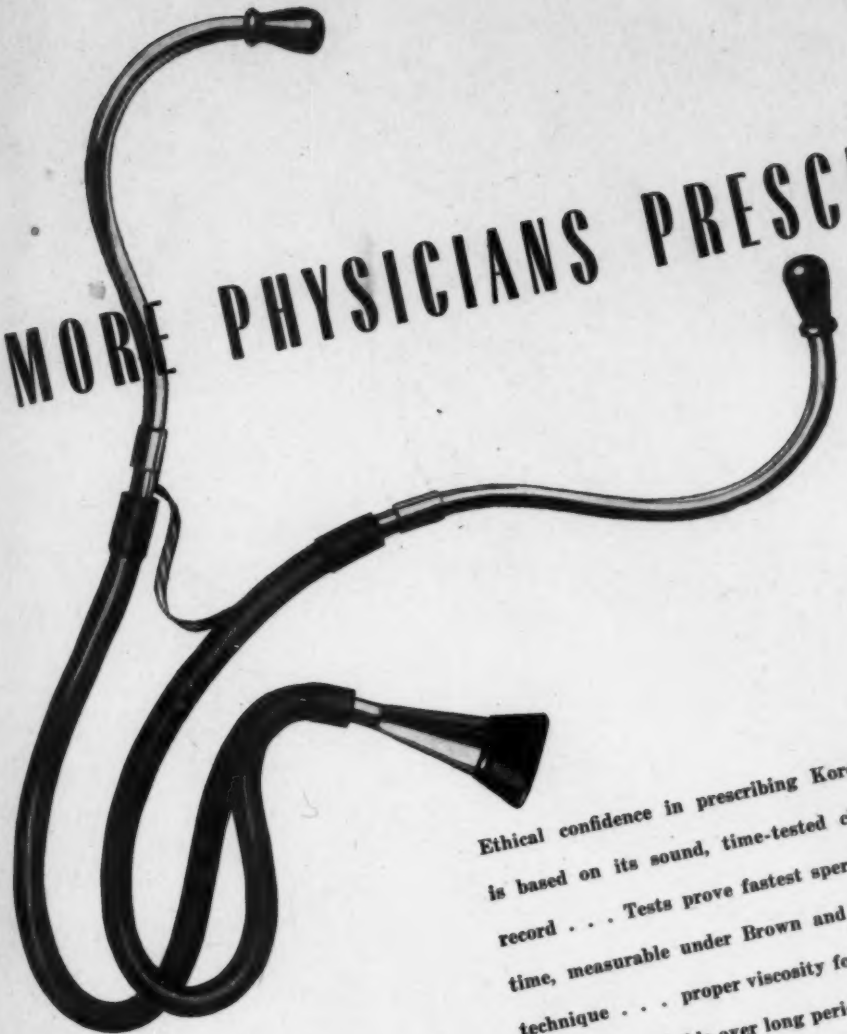

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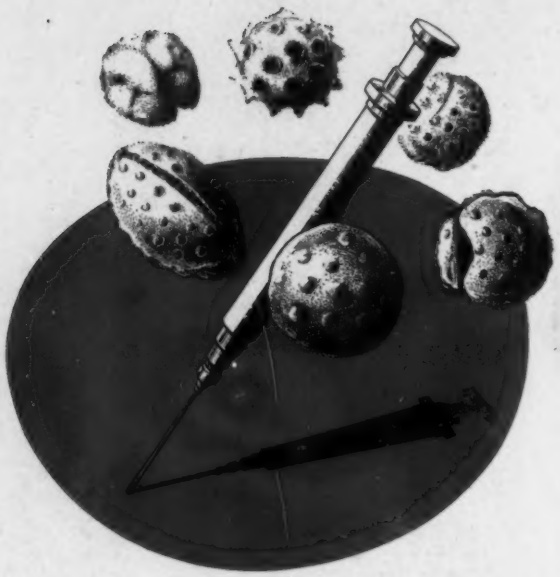

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1. Arbesman, C. E. et al. Jl. of Allergy 17:275, Sept. 1946.
2. Fuchs, A. M. et al. Jl. of Allergy 18:385, Nov. 1947.
3. Feinberg, S. M. and Friedlaender, S. Am. J. Med. Sci. 213:58, Jan. 1947.

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